Reforms in drinking water and sanitation

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The Energy and Resources Institute

© The Energy and Resources Institute and
the United Nations Development Programme 2004

ISBN 81-7993-043-2

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Published by
TERI Press
The Energy and Resources Institute
Darbari Seth Block
IHC Complex
Lodhi Road
New Delhi – 110 003
India

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Printed at Rajkamal Electric Press, New Delhi

Contents

Foreword v

Preface vii

Acknowledgements xi

Water supply and sanitation in India 1

Need for reforms 19

Engaging the private sector 27

Directions and strategies for regulatory reforms 49

Democratic decentralization and community participation 61

The reform agenda 67

References 73

Index 77

Foreword

The growing emphasis on fiscal discipline in the post-liberalization era has made it difficult for governments to continue to provide financial support to loss-making infrastructure services, particularly water supply and sanitation. There is now an increasing focus on both traditional community-based and new private-sector-oriented approaches to the augmentation and management of such environmental infrastructure services. However, the effectiveness of policies, strategies, and institutions in the sector is limited by knowledge gaps that adapt the extensive experience in such reforms in other sectors and countries to the peculiarities of the water sector in India.

Recognizing the need for a body of knowledge on the subject, TERI seeks to bring together its expertise in infrastructure reforms and its experience in working with local communities and the corporate sector, in an endeavour to develop strategies for sustainable development of water resources in a liberalized environment. As an applied research group in this sector, TERI has been active in assisting governments in India in developing policies and strategies for ensuring universal access to basic environmental services to help improve the overall quality of life.

As the issues in these sectors are multifaceted and require several integrated interventions, TERI seeks to develop potential solutions in collaboration with diverse stakeholder groups. This is reflected in this publication as well where, with support from the United Nations Development Programme and the Department of Economic Affairs, Government of India, TERI has prepared a reforms package for the evolution of environmental infrastructure sectors in a market-oriented economy. This publication is based on extensive participatory research on a collaborative project by TERI with the active support and cooperation of the local stakeholders in the selected states, namely Maharashtra and Rajasthan.

We hope that this book will be of value to experts in municipal administration and policy-makers in assessing policies and regulations in an evolving environment, and in fostering informed debate on regulatory reforms in the environmental infrastructure services.

R K Pachauri
Director-General, TERI

Preface

Augmentation of water supply, sanitation, and solid waste services and improvement in service quality call for significant investments. As in other core infrastructure sectors, the state cannot finance all such developmental activities on its own. Thus, private investment would be required to augment the efforts of the state in these critical sectors.

However, the peculiarity of the environment infrastructure sectors, in terms of being basic minimum services, makes PSP (private sector participation) particularly complex. First, since the continued availability of these services is essential to human life, availability of these services to the economically disadvantaged groups at low delivery prices has to be ensured. Thus, USO (universal service obligation) is much stronger than, say, in the telecom sector, and this has implications for tariff determination and levels of subsidy. Second, the health and sanitation aspects associated with environmental services are important, and these cannot be left to the private operators without appropriate regulation. Third, as in other network industries, the predominant cost in such sectors is the cost of transmission and distribution, and not the cost of production or storage. As the scope for competition in distribution services is limited, the sector is characterized by a strong element of monopoly. Fourth, as most of the distribution system is buried, information on the network – necessary to facilitate investment decisions – is not easily available.

Thus, any attempt to privatize this sector would have to address these issues so that neither the consumers nor the investors are dissatisfied in the liberalized environment. The regulatory authorities will have to do a fine balancing act to secure the financial viability of the industry on the one hand and protect the interests of consumers on the other. In addition, as the scope of competition in infrastructure services is limited, the regulator would have to ensure that the utilities do not exploit their monopoly power at the expense of the consumers. This is even more necessary if the utility is to be privatized. Finally, as is pointed out by Cowen (1997), the gains from privatization are maximized with complete privatization of the utility where the maximum risk and responsibility lies with the private operators. The design of independent regulatory supervision in this case becomes even more significant.

Keeping this in view, the United Nations Development Programme, in consultation with the Department of Economic Affairs, Government of India, commissioned TERI to prepare a discussion paper that would focus on regulatory reforms in drinking water, sanitation, and solid waste sectors in India. The objective of the project was to facilitate regulatory reform in these environmental infrastructure sectors, addressing in particular the institutional, regulatory, and legislative aspects. The study focused on the water supply and sewerage and solid waste sectors. The report presents a reform package for the evolution of environmental infrastructure sectors in a market-oriented economy. This publication is based on the final report of that project, focusing only on the water supply and sanitation sectors.

Chapter 1 presents an overview of the water and sanitation sectors in India, highlighting their status and the present institutional and regulatory structure. The focus is on the current levels of service delivery, the estimated investments to achieve the target level of coverage, and the institutional arrangements currently in place. Chapter 2 details the need for improvements in coverage and quality of service delivered, and reviews the adequacy of the present institutional structures to provide these efficiently. Chapter 3 presents a strategy for PSP in the sector based on various options for engaging the private sector. This is presented in the context of current practices in private participation in water supply and sanitation services around the world. The case for independent regulation in the sector and the concurrent regulatory reforms are detailed in Chapter 4. Models and strategies for effectively engaging communities are detailed in Chapter 5. Finally, the next steps are summarized in Chapter 6.

Acknowledgements

This publication is the culmination of two years of participatory research on a collaborative project by TERI that sought to provide a framework for regulatory reforms in the environmental infrastructure sectors in India, namely, water supply, sanitation, and solid waste, to augment the supply and improve service quality. Since the approach to the project was to develop case studies of delivery mechanisms at the local level to understand the institutional and policy constraints in the sector, this project would not have been possible without the active support and cooperation of local stakeholders in the selected states-Maharashtra and Rajasthan. We would also like to acknowledge the inputs provided by a number of sector experts.

We would like to gratefully acknowledge the members of the Project Advisory Committee for their help in conceptualizing and guiding the project: Mr S Behura, Joint Secretary, Ministry of Finance, GoI (Government of India); Mr Suman Bery, Director-General, National Council of Applied Economic Research; Mr S C Mahalik, former Chairman, Orissa Electricity Regulatory Commission; Prof. S L Rao, Visiting Distinguished Fellow, TERI; Mr Ajay Shankar, Joint Secretary, Ministry of Power, GoI; Mr Pradeep Sharma, Division Chief/Economist, United Nations Development Programme; Mr S Sundar, Distinguished Fellow, TERI; and Mr M S Verma, Chairman, Telecom Regulatory Authority of India.

We would like to thank Dr Leena Srivastava and Dr S K Sarkar from TERI for their valuable comments. We would also like to acknowledge the support and guidance provided by Dr R K Pachauri, Director-General, TERI, in our efforts towards promoting reforms in the drinking water and sanitation sectors in India.

We would like to also thank colleagues in TERI Press for the production and publication of this book; Ms Sonia Khanduri for secretarial assistance; and Mr P K Jayanthan for indexing.

1

Water supply and sanitation in India

Water supply and sewerage, and solid waste management are state subjects as provided for in the Constitution of India; the Union government only formulates guiding policies, sets standards, and provides technical and financial assistance to the states. At the local level, according to the provisions of the 73rd and 74th Constitutional Amendments, ULBs (urban local bodies) are responsible for providing water supply in urban areas, and the Panchayati Raj institutions carry this responsibility in rural areas. Local government, including self-government institutions in both urban and rural areas, is an exclusive state subject. Though the Union government cannot enact any law to create rights and liabilities relating to these subjects, it can influence state governments who lay down the policy and legislative framework within which local bodies deliver water supply and sanitation services.

Status of the sector

Access to water and sanitation services is not universal in India. About 95% of rural habitations have been fully provided with drinking water facilities while less than 20% have been covered by sanitation facilities (MoRD 2003). Similarly, in the case of urban habitations, 91% of the urban population has been provided access to water supply and around 55% to sewerage and sanitation facilities. The Tenth FYP (Five-Year Plan), quoting the 54th round of the National Sample Survey, states that 70% of urban households reported being served by taps and 21% by tube wells or hand pumps. Also, 66% of urban households reported having their principal source of drinking water within their premises, while another 32% had it within 200 m.

Other problems associated with water supply are the presence of impurities and the fact that the supply is largely unmetered. Groundwater is being increasingly overexploited in some Indian states. Surface water, on the other hand, is being used either inadequately or inefficiently. In most urban areas, water supply is intermittent. In metropolitan cities such as Ahmedabad, Bangalore, Hyderabad, and Pune, water is supplied only for a few hours every day. For instance, in Ahmedabad, water supply is limited from one to one-and-a-half hours a day and in Pune, from two to four hours. Estimates of average physical water losses in the system range from 25% to over 50% of the total supply (Planning Commission 2003). Non-physical, unaccounted (or 'administrative') water losses are also likely to be two to three times the physical losses incurred. The distribution losses of treated water range between 25% and 40% (TERI 2001). A comparison with other regions of the world shows that access to safe drinking water in India is 75% as compared to Africa (67%), Latin America (90%), Asia-Pacific (83%), and West Asia (87%) (The World Bank 1998).

Sewage from India's cities increased from an estimated 5 billion litres a day in 1947 to 30 billion litres a day in 1997. Of this, only 10% is treated. Even in large cities, waste water treatment efficiency is low. For instance, in cities with more than 100 000 people, only 70% of the population has access to treatment facilities and there too, the treatment efficiency is only 30% (CPCB 2000a; 2000b). The remaining untreated sewage from urban areas finds its way into water bodies, making the water unfit not only for drinking but also for bathing. India's Tenth FYP states that 80% of surface water pollution is due to untreated sewage. This trend is projected to continue in the future (Box 1). The lack of adequate sanitation facilities has also led to severe impacts on health. The annual economic losses due to the adverse effects of poor quality drinking water on human health are estimated to be 122 billion rupees (Pachauri and Sridharan

Box 1 Water quality trends in India: extracts from TERI study

The poor quality of water aggravates the effect of low levels of water resources. Water quality measured in BOD (biochemical oxygen demand) shows an upward trend over the period 1992–2001.* Out of the monitoring stations along India's rivers extending over a total riverine length of about 45 000 km, 14% show high pollution (BOD greater than 6 mg/litre) and 19% show moderate pollution (BOD between 3–6 mg/litre) (CPCB various years).

On the other hand, the MPN (most probable number) – a count of the bacterial coliform population in water – as revealed by the published reports of the Central Pollution Control Board shows a fluctuating trend. A major reason for the stress on water resources is the rising shortfall in the provision of basic municipal services including water supply, sanitation, and solid waste management.

* Biochemical oxygen demand or BOD refers to the amount of oxygen required by microorganisms to degrade organic pollutants. A higher level of BOD signifies a higher level of organic pollution load. The acceptable level of BOD for drinking quality surface water before treatment is 3 mg per litre.

Source TERI (2004)

1998). An international comparison shows that access to sanitation for India is the lowest at 63%, as compared to Africa (64%), Latin America (88%), Asia-Pacific (84%), and West Asia (98%) (The World Bank 1998).

Investments required

One of the objectives of the Ninth FYP (1997–2002) was to provide adequate and safe drinking water that would be easily accessible to 100% of the population living in urban and rural areas. This has been reiterated in the Tenth FYP. Similarly, the target for sanitation is that 60% of the population in urban areas and 30% of the population in rural areas must have access to sanitation facilities. Out of this, the estimated achievement of the Ninth FYP is 57% of the urban population and 17.5% of the rural population (Planning Commission 2003). The Tenth FYP pegs its urban target for sanitation at 75% of the total urban population. These targets compare well with the Millennium Development Goals adopted by the United Nations General Assembly at its Millennium Summit (Box 2).

To achieve these objectives, the Planning Commission has estimated huge investment needs for water supply and sanitation programmes. The *India Infrastructure Report* (NCAER 1996) estimated an annual requirement of 280 billion rupees for providing water supply and sanitation infrastructure for the urban population for the period 1996–2001, and 277 billion rupees for 2001–06. Compared to this, the total allocation for the schemes pertaining to urban water supply and sanitation during the Ninth FYP period was 186 billion rupees. The Tenth FYP estimates the investment requirement at 282 billion rupees for water supply and 232 billion rupees for sanitation during 2003–08 (Planning Commission 2003).

Box 2 The Millennium Development Goals

At the Millennium Summit in September 2000, 147 heads of state and government adopted the Millennium Declaration and reaffirmed their commitment to working towards a world in which sustaining development and eliminating poverty would have the highest priority. The declaration led to the formulation of a concise set of goals, numerical targets, and quantifiable indicators – the Millennium Development Goals – that focus the efforts of the world community on achieving significant and measurable improvement in people's lives. These goals are given below.

- **Eradicate extreme poverty and hunger.**
  - Reduce by half the proportion of people living on less than a dollar a day.
  - Reduce by half the proportion of people who suffer from hunger.
- **Achieve universal primary education.**
  - Ensure that all boys and girls complete a full course of primary schooling.

- **Promote gender equality and empower women.**
  - Eliminate gender disparity in primary and secondary education preferably by 2005, and at all levels by 2015.
- **Reduce child mortality.**
  - Reduce by two-thirds the mortality rate among children under five years of age.
- **Improve maternal health.**
  - Reduce by three-quarters the maternal mortality ratio.
- **Combat HIV/AIDS, malaria, and other diseases.**
  - Halt and begin to reverse the spread of HIV/AIDS.
  - Halt and begin to reverse the incidence of malaria and other major diseases.
- **Ensure environmental sustainability.**
  - Integrate the principles of sustainable development into country policies and programmes; reverse loss of environmental resources.
  - Reduce by half the proportion of people without sustainable access to safe drinking water.
  - Achieve significant improvement in lives of at least 100 million slum dwellers, by 2020.
- **Develop a global partnership for development.**
  - Develop further an open trading and financial system that is rule-based, predictable, and non-discriminatory; and includes a commitment to good governance, development, and poverty reduction-nationally and internationally.
  - Address the least developed countries' special needs. This includes tariff- and quota-free access for their exports; enhanced debt relief for heavily indebted poor countries; cancellation of official bilateral debt; and more generous official development assistance for countries committed to poverty reduction.
  - Address the special needs of landlocked and small island developing states.
  - Deal comprehensively with developing countries' debt problems through national and international measures to make debt sustainable in the long term.
  - In cooperation with the developing countries, develop decent and productive work for youth.
  - In cooperation with pharmaceutical companies, provide access to affordable essential drugs in developing countries.
  - In cooperation with the private sector, make available the benefits of new technologies, especially information and communications technologies.

Source <www.un.org/millenniumgoals/>, last accessed on 1 July 2004

Institutional set-up at the centre

The Union government's role in water and sanitation is generally limited to an advisory function. Nevertheless, it does influence sectoral development through centrally funded schemes and programmes for state governments and local bodies. It operates through the following agencies.

Ministry of Urban Development and Poverty Alleviation

At the national level, the MoUDPA (Ministry of Urban Development and Poverty Alleviation) is the nodal agency for urban water supply and sanitation. The Ministry formulates policy for the sector, provides finances for specific schemes formulated by the Planning Commission, monitors implementation of various programmes, and promotes technical capabilities of various sector institutions. Technical standards to be adopted in urban water and sanitation projects are also formulated by this ministry. Under the administrative control of the MoUDPA, the CPHEEO (Central Public Health Engineering and Environmental Organization), HUDCO (Housing and Urban Development Corporation), and the TCPO (Town and Country Planning Organization) play vital roles in supporting the development of the sector.

The CPHEEO is the technical wing of MoUDPA and provides technical guidelines and assistance to state governments. It is responsible for national-level planning and programming, and advises various state governments and central agencies on technical aspects, monitoring, and evaluation of water supply and sewerage programmes. HUDCO, a public sector corporation under the MoUDPA, is the financing arm. The TCPO is the urban planning arm of the Union government and has been functioning as a technical arm of the Ministry of Urban Affairs and

Employment in matters concerning urban and regional planning and development.

Ministry of Rural Development

The MoRD (Ministry of Rural Development) is the nodal agency for water supply and sanitation in rural areas. In 1972/73, the MoRD introduced the ARWSP (Accelerated Rural Water Supply Programme) to assist the states and Union Territories in hastening the process of provision of drinking water supply. The entire programme was given a mission approach with the launch of the NDWM (National Drinking Water Mission), also called the Technology Mission of Drinking Water and Related Water Management, in 1986. The NDWM was renamed the RGNDWM (Rajiv Gandhi National Drinking Water Mission) in 1991.

Since water supply is a state subject, state governments have been implementing the RWSP (Rural Water Supply Programme) under the SSMNP (State Sector Minimum Needs Programme). The central government, through the RGNDWM, supplements the efforts of state governments by providing assistance under the ARWSP.

Ministry of Health and Family Welfare

There are no statutory standards for water quality in India. The MoHFW (Ministry of Health and Family Welfare) sets non-statutory guidelines, based on WHO (World Health Organization) specifications, for water quality fit for human consumption, and promotes sanitation programmes in urban slums and rural areas through technical assistance and funding. Unfortunately, there is no specific provision in existing legislations that requires service-providers to lay down and enforce water quality standards. Most municipal legislations define the minimum water quality only qualitatively as 'wholesome' or 'potable'. There is, thus, a need to ensure that minimum standards of water quality are statutorily laid down and adhered to.

Ministry of Environment and Forests

The MoEF (Ministry of Environment and Forests) is responsible for prevention and control of pollution by municipal (sewerage) effluents by enforcing the Water (Prevention and Control of Pollution) Act, 1974, and the EPA (Environment [Protection] Act), 1986, through the SPCBs (state pollution control boards) at the state level. The Water Act was passed under Article 252(1) of the Constitution since water is a state subject. (Article 252 empowers the parliament to enact laws on state subjects for two or more states, where state legislatures have consented to such legislation.) The Water Act vests regulatory authority in SPCBs and empowers them to establish and enforce effluent standards. The CPCB (Central Pollution Control Board) performs the same functions for Union Territories and coordinates pollution activities among the states. The EPA provides for laying down of standards for discharge of environmental pollutants.

Ministry of Water Resources

The MoWR (Ministry of Water Resources) provides for the overall national perspective of water planning and coordination for the management of the nation's water resources. The MoWR is not directly responsible for drinking water supply and sanitation services, but is responsible for some rural drinking water schemes and management of both surface and groundwater.

The MoWR's National Water Resources Council is the apex policy-making body for water resources development in India and for development of the NWP (National Water Policy). It was set up in March 1983 under the chairmanship of the Prime Minister of India. The Union Minister for

Water Resources is the vice-chairperson of the Council, which has constituted a National Water Board to scrutinize issues relevant to the development of water resources in the country.

In addition, the Supreme Court has opined that though water is a state subject, Article 253 of the Constitution and the provisions of the EPA, 1986, empower the Union government to regulate groundwater extraction. It has, therefore, directed the GoI (Government of India) to declare the CGWB (Central Groundwater Board) as an Authority – the CGWA (Central Groundwater Authority) – under the EPA, and delegate powers for regulation and control of groundwater development to it. With a jurisdiction covering the entire country, the CGWA is empowered to regulate the indiscriminate boring and withdrawal of groundwater in the country, and issue necessary regulatory directions with a view to preserving and protecting groundwater.

The CGWA is thus responsible for the following tasks.

- Evolving norms for regulation of groundwater extraction
- Taking necessary actions for protection and conservation of groundwater resources
- Notifying and establishing critical areas for protection.

The MoWR has also prepared a model bill for all state governments for regulation and control of the development of groundwater. The model draft bill was first circulated in 1968, and again in 1992, to all the states with an advice to enact it (Singh 1995). The bill provides the procedures for the constitution of the SGWA (State Groundwater Authority). In addition, powers to notify areas and grant permission and restrictions for control and regulation of groundwater development are described in detail. Maharashtra and Tamil Nadu are states that have enacted legislation for regulation of groundwater extraction.

Institutional set-up at the state level

The institutional arrangements for providing water and sanitation services at the state level are not uniform across all states. The following agencies make up the general institutional structure that exists at the state level for regulating the water and sanitation sectors.

State government departments and local bodies

The DoWSS (Department of Water Supply and Sanitation) is usually the key state-level department responsible for formulating the drinking water policy, preparing annual plans and FYPs for sectoral development, allocating funds to the implementing agencies, and guiding the development. The DoWSS also provides technical assistance to local bodies in formulating programmes.

In most states in India, there is a statutory SWSSB (state water supply and sewerage board) that undertakes most water supply and sewerage schemes, apart from regulatory and policy-making functions. The responsibility of providing these services rests with the local bodies, both urban and rural. Apart from the DoWSS, the Urban Development Department and the Rural Development Department are responsible for general regulatory supervision over the urban and rural local bodies, respectively. The Public Health Department lays down guidelines for water standards and hygiene. The Department of Environment monitors and lays down standards for municipal effluents through the SPCBs.

Water supply and sanitation boards

The SWSSBs are usually responsible for operations and maintenance works and capital works in small cities. In larger cities, the SWSSBs are only responsible for capital works, while municipal bodies are responsible for operations and maintenance. There are separate and autonomous local water boards in some cities such as Bangalore, Chennai, Delhi, and Hyderabad. In some states, instead of a statutory board, the Public Health and Engineering Department is responsible for engineering, planning, design, and construction, while the local government manages operations and maintenance.

Groundwater regulation

In states such as Maharashtra, which have enacted legislation covering groundwater regulation, there is a separate agency to regulate the utilization of groundwater. The GSDA (Groundwater Survey and Development Agency) in Maharashtra has been operational since 1972. It receives budgetary grants from, and reports to, the state's DoWSS. The main objectives of GSDA include the following.

- Implement the Maharashtra Groundwater (Regulation for Drinking Water Purpose) Act, 1993.
- Forecast and monitor groundwater conditions in Maharashtra.
- Install and maintain water bore wells for rural drinking water.
- Offer technical advice to agencies implementing groundwater-based minor irrigation projects, as well as to private well owners who need bank credit.

Policy interventions

There have been several policy interventions by the Union government in the water and sanitation sectors. These policies highlight the need to improve the delivery of these basic services. They also acknowledge the possibility (and need) of independent bodies to regulate the sector as well as the importance of community participation. For instance, the NWP of 2002 calls for a holistic and integrated approach to water management, identifies drinking water as the top priority, discusses various environmental issues, and proposes participation of the beneficiaries and the private sector in water management.

Several other Union government policy statements also have a bearing on the water sector. In the 1991 economic policy, and subsequent policy statements on economic liberalization, market-based approaches to economic management have discussed issues like privatization of urban water and decentralization. The policy statement for abatement of pollution emphasizes pollution prevention instead of conventional end-of-the-pipe effluent treatment, and identifies the adoption of best available and practicable technologies as an essential element of pollution prevention.

National Water Policy, 2002

The NWP of 1979 assigned the highest priority to drinking water, advocating the integrated use of surface and groundwater, and recognizing water as an economic good. This has been reiterated in the NWP of 2002, some of the key features of which are listed below.

- Drinking water should be a priority in the planning and operating of water supply systems, including irrigation schemes.
- Maintenance of existing water resources schemes should be given special attention under these institutional arrangements.
- A participatory approach should be adopted, and water user associations and local bodies should be involved in related operations. There should also be maintenance training leading to the eventual transfer of management to local bodies and user groups.
- PSP (private sector participation) should be encouraged in planning, development, and management to introduce corporate management practices and improve service efficiency.
- A standardized national information system with a network of data banks and databases, which integrate and strengthen the existing central and state level agencies, should be established.

- Exploitation of groundwater resources should be so regulated as not to exceed the recharging possibilities as also to ensure social equity.

Urban Reform Incentive Fund

The Union Budget for 2002/03 called for the setting up of URIF (Urban Reform Incentive Fund) with an initial outlay of 5000 million rupees to provide reform-linked assistance to states. The GoI approved the proposal on 28 June 2003. In the first phase, URIF will provide incentives to state governments to carry out reforms in seven areas.

1 Repeal of the Urban Land Ceiling and Regulation Act at the state level, by resolution
2 Rationalization of stamp duty (in phases) to bring it down to no more than 5%, by the end of the Tenth FYP period
3 Reform of rent control laws to remove rent control so as to stimulate private investment in rental housing
4 Introduction of computerized processes of registration
5 Reform of property tax, such that, by the end of the Tenth FYP period, property tax collection may become a major source of revenue for ULBs, and introduction of arrangements for its effective implementation such that collection efficiency reaches at least 85% of the total billing or demand by local bodies
6 Levy of reasonable user charges by ULBs, with the objective that the full cost of O&M (operation and maintenance) is collected by the end of the Tenth FYP period
7 Introduction of a double entry system of accounting for ULBs.

The funds under URIF will be released as additional central assistance to the states. Allocations will be based on the share of each state's urban population compared to total urban population. Significantly, public-private partnerships in water supply and sanitation are being encouraged though this mechanism. The states will enter into MoAs (memoranda of agreement) with the MoUDPA for carrying out the above reforms. States that do not wish to undertake all seven reforms can sign an MoA, covering less than the complete reform package. Each reform area has been assigned special weightage. On signing the MoA, 50% of the outlay will be released, and the balance will be given to the state government after it has achieved the prescribed milestones.

Decentralization and local governance

Historically, the village panchayat has been a unit of local administration since the early days of British rule, but it had to work under government control. When pressed for local autonomy, the British offered concessions by giving powers of self-government to panchayats and municipalities under different enactments like the Bengal Local Self-Government Act, 1885. Later, this concept also found place in the Constitution of India (Article 40, Directive Principles) and in 1992, the 73rd and 74th Constitutional Amendments were passed to further the organization of these local units, by inserting specific provisions in the Constitution itself on the basis of which the legislatures of the various states might enact detailed laws. These amendments have rationalized the scope of, and empowered the municipalities and panchayats. Maintenance and delivery of services for water and sewerage at the local levels are now included in the functions of the locally elected municipal corporations, municipal councils, *nagar* (town) panchayats, *gram* (village) panchayats, etc.

73rd Constitutional Amendment, 1992

This amendment gives a constitutional foundation to the local self-government units at the village and district levels. Under this amendment, a three-tier system of panchayats is envisaged (Articles 243A to 243O of the Constitution).

1. The village panchayat
2. The district panchayat
3. The intermediate panchayat, between the village and district panchayat in states where the population is above 2 million.

The state legislature has the power to confer on the panchayats such powers and authorities as may be necessary to enable them to function as institutions of self-government. The functions assigned to panchayats include the preparation of plans for water management, sanitation, solid waste management, land improvement and sustainable land use, and soil conservation.

74th Constitutional Amendment, 1992

This amendment gives a constitutional foundation to the local self-government units (municipalities) in the urban areas (Articles 243P to 243Z of the Constitution). Municipalities can be either of the following bodies (Box 3).

- *Nagar* panchayat for a transitional area, which refers to an area being transformed from a rural area into an urban one
- Municipal council for a smaller urban area
- Municipal corporation for a larger urban area.

Article 243Q makes it obligatory for every state to constitute such units. The responsibilities of the municipalities include urban planning and regulation of land use, water supply, public health, etc. All states, except Jammu and Kashmir, have either formulated new municipal laws or amended existing laws to comply with this Constitutional Amendment. In addition, State Finance Commissions have been constituted in all states (except Arunachal Pradesh) for the devolution of resources to the local bodies.

Box 3 Defining municipal councils and municipal corporations

Article 243Q of the 74th Constitutional Amendment lays down the criteria for declaring an area as a municipal authority. This includes the population and population density, the revenue generated for local administration, the percentage of employment in non-agricultural activities, the economic importance, or such other factors as may be specified by the state government by public notification for this purpose.

State governments have amended their municipal laws to reflect the Constitutional Amendment. However, the norms are not consistent across all states. For instance, Tamil Nadu has used the income criteria. In addition to the population criteria, the amended Municipal Act of Andhra Pradesh – Andhra Act – also follows density of population, percentage of employment in non-agricultural activities, revenue of local body, and economic importance of a city or town for constituting different types of urban local governments. The Andhra Act has further stated that all the district headquarters should be classified as not lower than first-grade municipalities while the *nagar* panchayats should be treated as equivalent to third-grade municipalities, irrespective of their annual incomes or other such indicators. Amended municipal laws of Maharashtra state that municipal corporations are to be constituted in the larger urban area, only if it has a population not less than 0.3 million people. In case of a municipal council, a minimum population of 25 000 people and 35% employment in non-agricultural activities is necessary. For *nagar* panchayats, the Maharashtra Act No. XLI of 1994 has provided that no area shall be specified as a 'transitional area' unless it has a population between 10 000 and 25 000 people, it is within 25 km of any municipal corporation or an A-class municipal council, and the percentage of employment in non-agricultural activities in such area is not less than 25%.

Source NIUA (1998)

Accelerated Urban Water Supply Programme

The Accelerated Urban Water Supply Programme was initiated by the MoUDPA in 1993/94 to provide safe and adequate water supply facilities to the entire population of towns with less than 20 000 people according to the 1991

Census. In this programme, 50% of the total financing is provided by the Union government, and the remainder by the state government. The allocation to each state is made on the basis of the population covered under the programme and the incidence of poverty in the state. Other issues that are taken into account include whether it is a hill state or not, whether it is a drought-prone state, and whether it is a desert area. Within each state, allocations for towns are prioritized on the basis of similar parameters, giving weight also to the impact of poor water quality on health levels.

Rajiv Gandhi National Drinking Water Mission

As mentioned earlier, state governments have been implementing the RWSP under the SSMNP. Under the RGNDWM, the Union government supplements the efforts of the state governments through programmes such as the ARWSP, the Sector Reform Programme, and five sub-missions dealing with problems of water quality; sources drying up or needing construction; water conservation and recharge structures, and other measures with the states planning and approving them on their own.

In the Sector Reform Programme, funds are provided for institutionalizing community participation in capital cost sharing, O&M, water quality monitoring, and surveillance in identified pilot districts. The programme is implemented by an agency selected by the state government. The Panchayati Raj institutions are also involved in scheme implementation, particularly in selecting the locations of stand posts, sources, O&M, and tariff fixing. The water supply norm for designing the scheme has been determined at 40 lpcd (litres per capita per day), which translates into one stand post for every 250 persons. An additional 30 lpcd is allowed for animals in drought-prone areas.

In this programme, 50% of the total financing is provided by the Union government, and the remainder by the state government. The allocation to each state is made on the basis of the population covered under the programme and the incidence of poverty in the state. Other issues that are taken into account include whether or not it is a hill state, whether it is drought-prone, whether it is a desert area, whether there is participation by disadvantaged communities, and so forth. Priority is given to areas classified as NC (not covered) or NSS (no safe source). The former includes habitations without a water source within 1.6 km of the habitations in plains, or 100-m elevations in hilly areas. The latter refers to habitations that have a water source, but of inadequate quality (marked by excess salinity, iron, fluoride, arsenic, or other toxic elements, or biologically contaminated). The next level of priority is where the 40-lpcd criterion is not met—the PC (partially covered) habitations.

Greater beneficiary participation has also been envisaged under the rural sanitation programme under the SSMNP that the state governments implement under the Centrally Sponsored Rural Sanitation Programme.

Some state governments – like Maharashtra's – have introduced a number of demand-driven, supportive policy directions. The revised ARWSS (Accelerated Rural Water Supply Scheme) of 1999 envisaged a demand-driven approach to ensure that investment decisions are made efficiently. Under the ARWSS, Maharashtra has mandated the following measures.

- There must be community contribution of 10% of capital expenditure and 100% of O&M expenditure, demonstrated through a resolution of the gram panchayat in case of single-village schemes, or through the zilla parishad in case of larger schemes.
- Schemes should be designed after due consultation with rural communities, represented by the gram sabhas. Implementation of the schemes should be monitored by the village water and sanitation committees.

2

Need for reforms

The NWP of 1979 assigned the highest priority to water, advocating the promotion of integrated use of surface and groundwater and recognizing water as an economic good. This has also been reiterated in the NWP of 2002. However, these issues have been only partly translated into action.

Over the last decade, the responsibilities and problems to be tackled by the ULBs (as managers and service providers) have increased. The 73rd and 74th Constitutional Amendments have led to decentralization of responsibility to the local bodies, thereby increasing the latter's functional areas and giving them more powers. However, these institutions are still in the process of building their financial capabilities and institutional capacities to address issues in service delivery.

Multiplicity of organizations

The mode of local governance and management of environmental services, given the limited presence of dedicated institutions with a statutory mandate for resource conservation, has become very complex. For instance, departments within the municipal authorities charged with water supply and sanitation functions, often work with limited resources and without any commitments towards resource mobilization. Moreover, some institutions are local, while others are at the state or central levels. Due to lack of coordination among these organizations, a situation has arisen where the responsibilities and powers of various authorities in delivering a single service are ambiguous and

Box 1 Institutional complexities in the water sector in Maharashtra

Overlapping responsibilities – such as the application of tariff in schemes where both the MJP (Maharashtra Jeevan Pradhikaran) and a local body are involved, since there are provisions for tariff structuring both in the MJP Act (Section 14, 15[2][f]) and the local body legislation (for example, Chapter IX, The Maharashtra Municipal Councils, Nagar Panchayats, and Industrial Townships Act, 1965) – can lead to a situation of conflict between various agencies, and a diffusion of responsibility in the sector. This is particularly true of the MJP and the local bodies. Similarly, though construction of water schemes is one of the main functions of the MJP, it is forced to also operate some schemes, in which local bodies have renounced their responsibilities, placing substantial maintenance liability on the government.

Such conflicts arise largely because there are no provisions to guide the relationship between the MJP and the local bodies. The main reasons for this are reluctance of the local bodies to take over the completed schemes; lack of sense of ownership on the latter's part; and non-availability of adequate funds and trained personnel at the local level.

unclear. For example, while the management of water resources is the responsibility of the state water supply department and the irrigation department, the construction of water works is the responsibility of another state-level agency, usually the water supply board. Finally, the O&M of these water works is the responsibility of ULBs (Box 1). There is no mechanism for coordination between these agencies, either at the level of the state government or the central government.

Poor financial health

Inefficient revenue collection by local bodies (40%–45%), coupled with inadequate and highly subsidized user charges for provision of services and high administration costs (18%–22%), is a major problem. This has diminished the financial resources of the ULBs over the years, thus increasing their

Box 2 Water sector budget in the Ahmedabad Municipal Corporation

In the AMC (Ahmedabad Municipal Corporation), water supply revenue expenditure during 1999/2000 was over 10% of the total budget expenditure (approximately 438 million rupees). If this is compared with the tax collected under the water tax/charge head, the revenue collection is just over 60% of the revenue expenditure in the water sector. While the operation and maintenance cost for providing water is 2.70 rupees per 1000 litres, the revenue collected is just 1.60 rupees per 1000 litres during 1998/99, implying that the corporation subsidizes water supply considerably. However, demand for the water taxes and charges were higher than the revenue expenditure in this sector. Thus, it would appear that the subsidy in this sector arises from a low rate of recovery in taxes, and not from under pricing of the service.

Source AMC (1999)

dependence on state governments and other external agencies for loans and grants. There is a need to channelize the limited resources for the most effective impacts. This would call for greater participation of user groups in the design of schemes in the sector to ensure that investments are targeted only at priority projects. It is also necessary to identify sources of funding other than the government for these sectors. Finally, enforcement of rational tariffs and cost recovery would be prerequisites for expanding institutional financial flows (Box 2). However, these reforms cannot take place unless proper legal and regulatory frameworks for such investment are created and developed, to ensure full cost recovery. This calls for innovative reforms in the regulatory supervision of the sector.

Capability and capacity

There is a need to upgrade existing urban infrastructure to enable it to deliver better urban services. At the same time, the roles and responsibilities of the public sector are being redefined through changes such as the 73rd and the 74th Constitutional Amendments. The urban service providers who are to meet this challenge need to be equipped with a broad spectrum of skills and expertise to undertake a wide variety of tasks ranging from the management of urban areas to involvement in the technical operation of water supply networks, including the monitoring and regulation of the private sector, attracting capital from the markets, and enforcing environment regulations. The local bodies do not have the requisite skills or capacity to perform such functions. The All-India Institute of Local Self-Government has assessed that this training need exists for nearly 50% of all municipal employees in India.

Lack of information

The ULBs and policy-makers are not aware of the current status of the quality of life in urban areas, due to the lack of an adequate and updated information database at the ward and zonal levels. Most ULBs in India do not have a management information system, which is essential for maintaining a good database to aid decision-making. Recognizing the importance of creating this database, the Eleventh Finance Commission has allocated 29 million rupees for its creation.

Current approach to management of the sector

The current approach to the management of environment infrastructure emphasizes development of water resources and construction of new infrastructure through a top-down, supply-oriented approach (Box 3). Further, inefficiencies in the institutional structures have also contributed to poor and unreliable services, and user dissatisfaction. In recent years, there have been many policy initiatives – both at the centre and in some states – which emphasized a demand-driven, participatory approach. It is envisaged that a

separating regulatory and operational services, strengthening of regulatory agencies would be required. A strong regulatory system would also be required for the envisaged increased role of the private sector. The evolving reform strategies would, therefore, need to have regulatory instruments that promote market-based regulation and introduce principles of economic regulation in managing the sector to encourage PSP; at the same time, addressal of social concerns (in terms of universal social obligation and service quality) needs to be ensured.

Democratic decentralization

With the implementation of the 73rd and 74th Constitutional Amendments, local bodies would increasingly need to take on the responsibility for O&M of the basic services of drinking water and sanitation. Most local bodies, however, have an excessive dependence on the central and state governments for their financial needs (Box 4). Thus, for real decentralization, along with the devolution of functions, necessary devolution of powers to local bodies to raise financial resources and enhanced technical capacities would also be required. Second, even though municipal legislation in states have delegated substantial powers in operating local governments, there is not enough community participation as the user is invariably not treated as a stakeholder; user preferences and WTP (willingness to pay) are never assessed; and a supply-driven approach is used for most schemes.

Groundwater regulation

Groundwater is one of the major sources for drinking water in the country. Though the need for effective regulation of groundwater extraction has been recognized through the model groundwater bill, most states do not have legislative frameworks in place to address groundwater regulation and comprehensive management needs. Tamil Nadu, Gujarat,

Box 4 Democratic decentralization in Maharashtra

Despite the 73rd and 74th Constitutional Amendments, there is no meaningful participation of the local institutions because of lack of financial and technical capacity. It is difficult for the zilla parishad to have flexible and adequate expenditure limits since the Financial Code (a subordinate legislation regulating approval of expenditure) sets a rigid procedure, and distributes financial powers to officers, office bearers, various committees, and the general body in a manner that prevents quick sanctioning of expenditure and proper operation and maintenance of the water supply schemes. For example, the present financial sanctioning limit of the head of the water supply department in a zilla parishad is 6000 rupees only. Cost limits imposed on zilla parishads thus need to be rationalized so as to make decentralization real. Also, district-level entities need to have complete freedom in implementation of multi-village schemes, and the state government should rationalize the capital cost limits imposed on the zilla parishads.

and Maharashtra are the only states that have enacted legislation for groundwater regulation. Though integrated watershed management is identified as a necessity, the regulatory frameworks in most states do not promote it in any way. Other issues that need to be addressed are waterlogging, water quality, end-use efficiency, allocation, and environmental considerations.

Quality of water

Bacteriological contamination of the drinking water is high in both rural and urban areas because of lack of appropriate sanitation, absence of disinfectant use, and recontamination in the distribution network. In the rural areas, poor sanitation is a major cause in affecting the quality of water. The health departments in state governments are responsible for monitoring the quality of drinking water while the SPCBs regulate the quality of waste water disposal, ensuring that the ambient water quality meets the designated best use. Water quality monitoring is, however, poor due to the lack of qualified and competent staff in the operations, management, and supervision areas.

There are no statutory standards for drinking water in the country. The BIS (Bureau of Indian Standards) has laid down non-statutory guidelines for potable drinking water. These guidelines are based on WHO specifications, and it is at the discretion of the local bodies to follow them.

Water quality has health and environmental implications. Since water is essential to life, and has to be provided to consumers with adequate quality, many countries such as the UK have kept water quality control under the government to set and ensure proper water quality standards (Box 5) to consumers.

Box 5 Monitoring water quality in the UK

Because of pressure from the public as well as the environmental groups in the UK, the government is regulating water quality standards by keeping regulatory functions of monitoring water quality under its ambit; it does so through its Drinking Water Inspectorate, under the Department of Environment. The Inspectorate has two functions, one of which is that, through its audit role, it carries out annual inspections of companies, and checks the monitoring results and data reliability of tests carried out by companies. It also investigates incidents where standards are breached. If monitoring reveals that water companies are failing to meet required standards, the Inspectorate takes action. Under the current regulation, companies are required to present what they propose to do in order to secure compliance with the standards, and then give legally binding undertakings in relation to that action. The investigation of incidents can similarly lead to action, such as the prosecution of water companies if they have not exercised due diligence in carrying out their work. Companies are required to carry out nearly 3 million tests on their drinking water supplies each year, and have to report the results to the Inspectorate.

3

Engaging the private sector

Incomes generated by local bodies as well as state institutions fall acutely short of requirement for capital investment, operation, maintenance, and upgrading of environmental services. Therefore, the water supply and sanitation utilities depend heavily on state government grants, loans, and subsidies for daily operation and on the Union government for capacity augmentation. While traditionally, investments in the sector have been financed by the governments, in the post-liberalization era, it would be difficult for governments to continue to provide financial support to such loss-making ventures, especially with the growing emphasis on fiscal discipline. Thus, private investment would be required to augment the efforts of the state in these sectors. Established approaches to PSP in infrastructure are based on the premise that private operators would achieve the goals of providing better services at a lower cost, while achieving system expansions more rapidly. This would also have the added benefit of freeing fiscal resources for other social purposes. This chapter outlines strategies for engaging the private sector in sustainable partnerships in the water supply and sanitation sectors.

Need for private participation in environment infrastructure

It has been universally recognized that improved infrastructure is essential for the social well-being of any nation, particularly in the area of water supply and sanitation. The significant economic impacts of poor infrastructure are also being recognized. This is particularly true for developing countries, and correcting this situation would require substantial improvements in the quality and coverage of these services. Another major consideration for PSP is the continued drain on the exchequer. With greater emphasis on fiscal discipline, it is becoming increasingly difficult for governments to continue funding ventures that generate big losses. In addition, the role of the state in the provision of services that can be more efficiently offered by private operators is being increasingly questioned.

Social and economic implications of poor service delivery

The economic restructuring in many countries and the world financial crises since the 1980s have impacted the well-being of residents in major cities, mainly through declining public expenditure on municipal services, housing, and infrastructure (Demery and Squire 1996; Gilbert 1993). Brockerhoff and Brennan (1998) used infant mortality rates to compare well-being across cities of 1 million or more residents and smaller settlements within developing regions. They found that the pronounced early infant survival advantage of big city residents in Latin America and the Caribbean declined steadily since the late 1970s, and was no longer apparent by the early 1990s. Sharp reductions in expenditure led to an exclusion from access to public utilities such as water and sanitation.

Exposure to polluted water results in numerous diseases including diarrhoea, hepatitis, typhoid, trachoma, and hookworm infection. Evidence from around the world establishes a strong inverse correlation between the well-being of a society and the poor delivery of environmental services (Schultz 1980; WHO 1978). Increase in the amount of water used and wide coverage of sewerage connections contribute to better hygiene and to the elimination of bacteriological contamination. Puffer and Serrano (1973) studied infant and child mortality in several Latin American cities and found that a high proportion of households reporting infant deaths lacked adequate water sources. In a study on the mortality variation in urban Brazil, Merrick (1985) found that access to piped water in a household is likely to be of most direct benefit in lowering mortality by reducing exposure to water-borne diseases, particularly diarrhoea. Even though it is often difficult to show the exact cause without carrying out large epidemiological surveys over many years, some evidence of the health impacts associated with poor water and sanitation quality is collated in Table 1.

Mortality rates are affected not only through reduced public expenditure on city infrastructure, but also through the way in which urban infrastructure is managed. One important aspect of urban infrastructure management is provision and delivery in the water and sewerage system. Recent urban studies suggest that to provide services effectively, it is necessary to have empowered coordinating bodies at the local level, which incorporate indigenous urban institutions into a programme (McCarney, Halfani, and Rodriguez 1995; Werna 1996). In addition, active involvement of the private sector in bridging supply-demand discrepancies in city services is also considered a necessary step to ensure the welfare of the city population (Briscoe 1992).

Although a large percentage of households have access to safe public water supply and sanitation in India, mortality and morbidity associated with water-borne diseases remain high. As stated above, improvements in water supply and sanitation can substantially reduce the incidence and severity of these diseases. Apart from increased capital outlay for these sectors and leveraging of investments from the private sector, some benefits would also be realized from efficiency improvements through private management of these sectors.

Table 1 Impact of poor service quality on health and associated costs

Study	*Result*
Hygiene and Health in Developing Countries: A Cost-Benefit Assessment, Bjorn Larsen; the Second International Scientific Forum on Home Hygiene Conference, New Delhi, 15–16 April 2002	425 000 out of a total of 800 000 'preventable' child deaths per annum may be actually 'prevented' by improved water and sanitation.
Environmental Health in India: Priorities in Andhra Pradesh, Environmental and Social Development Unit, South Asian Region, The World Bank, 2001	Lack of proper sanitation results in over 40 000 deaths amongst children in Andhra Pradesh every year.
The Global Burden of Disease 2000, World Health Organization, 2000	5.4% of all deaths in the world are due to water-related diseases.
How Access to Urban Potable Water and Sewerage Connections Affects Child Mortality, Anqing Shi, Development Research Group, The World Bank, 2000	▪ Child morality rate is inversely correlated with access to potable water and sewerage connection. ▪ Improved service delivery and involvement of the private sector would result in a reduction in child mortality.
The Cost of Inaction: Valuing the Economy-Wide Cost of Environmental Degradation in India, Asian Environment Division, The World Bank, 1995	It was estimated that a reduction of 47% of water-related loss of life was possible with the provision of safe water and sanitation.

Augmenting coverage and improving quality of service

Significant investments are required in the water and sanitation sectors to increase their coverage and improve the quality of service. Compared to a figure of 280 billion rupees estimated by NCAER (1996) for providing water supply and sanitation infrastructure facilities to just the urban population, the total allocation during the entire Ninth FYP period (1997–2002) was 186 billion rupees. The Tenth FYP estimates the investment requirement at 282 billion rupees for water supply and 232 billion rupees for sanitation during the period from 2003 through 2008 (Planning Commission 2003).

On the other hand, private sector funds could be tapped to generate revenues to augment service coverage. In the post-liberalization era, it would be difficult for the state government to perpetually finance losses in these sectors, let alone make a capital contribution for augmentation of services. Private capital and initiative can help accomplish operational efficiency and investment objectives in these sectors.

Some of the activities of local bodies such as billing, metering, and maintenance of treatment facilities are not natural monopolies, and could be provided instead by a number of private sector operators, on a competitive basis. Thus, it may be difficult to justify continued public expenditure on such activities, especially if these services can be provided more efficiently by the private sector.

Options for private sector participation

In a segmented fashion, the PSP option can take on different forms. These can be described as a continuum between the extremes of completely public sector responsibility, through joint responsibility, to private responsibility. PSP in areas such as billing and collection, meter installation, etc. (as in Mexico City), in contracting out operations of existing treatment works (as in Puerto Rico), and in creating new assets through BOOT (build-own-operate-transfer) options (as in Thailand) (The World Bank 1998), are some international examples of PSP in water supply and sanitation. The options for engaging the private sector and the extent of participation in various segments of water services in various countries are summarized in Table 2.

Service contract

Usually a short-term contract, this requires a private operator to perform certain specific tasks such as billing and collection, meter reading, loss monitoring, pipe repairing, etc. By using this option, it is possible to take advantage of private sector expertise in performing technical tasks or even open such tasks to competition. Under this option, the public utility manager is responsible for investment and also for coordinating the tasks being performed by private operators.

This form of PSP has been used extensively in India. In Chennai, for instance, efforts in involving the private sector in the water sector can be traced to the 1987 drought. At that time, excess water drawn by farmers in the surrounding areas was bought by the Chennai Metropolitan Water Supply and Sewerage Board (Metro Water). This practice is still in vogue in Chennai, where water is transported through tankers for filling static water tanks. In 2000, 338 hired tankers performed an average 2740 daily trips, filling 4290 tanks and supplying a total of 24.66 million litres per day.

Management contract

Also a short-term option, a management contract transfers the responsibility of O&M of the existing system to a private operator. The public utility is responsible for rehabilitation and new investment. The private operator receives fixed fees that could be related to various performance parameters. This option could bring technical and management expertise to the sector and, to some extent, improve operating efficiency, while generally there would be no investment. The commercial as well as investment risks remain with the public utility.

The Government of Trinidad and Tobago opted for a management contract (Table 2) of three to five years in the water sector as a preliminary step towards adopting a full-fledged concession agreement for subsequent years. It did so

Table 2 International experience in private sector participation

Option	Country	Operation	Management of system	Maintenance			Investment planning	Financing	Ownership of assets	Duration (years)
				A	B	C				
BOOT (new assets)	Thailand	R	P	R	R	R	R	R	Company/ public sector	10+
Management contract	Trinidad and Tobago	R	R	R	Q	P	P	P	Public sector	3–5
Concession	Buenos Aires, Bolivia, Chile	R	R	R	R	R	R	R	Public sector[a]	20–30
Asset sale	England and Wales	R	R	R	R	R	R	R	Company	Perpetuity

BOOT – build-own-operate-transfer

A – planning; B – carrying out the work; C – financing maintenance; R – responsibility varies according to contract; P – responsibility lies with the public sector; Q – responsibility lies with the private sector

[a] – assets are transferred to the concessionaire for a fixed period, but are owned by the state

Source The World Bank (1998)

for a number of reasons. First, the government found it difficult to amend the existing law immediately. Second, it did not have enough information on the infrastructure of the water and sanitation sectors to develop a detailed concession agreement. Third, it did not have sufficient regulatory capacity to develop an effective tariff-setting mechanism as well as monitor and implement the complex concession contract. The government, therefore, adopted – as an interim arrangement – a management contract for O&M of the water and sewerage system as well as for meeting additional investment targets. As part of the long-term plan for introducing concession contracts, it wanted private operators to collect – during the interim period – necessary information for developing a concession mechanism.

Build-operate-transfer/rehabilitate-operate-maintain

In a typical BOT (build-operate-transfer) option, a private operator would be required to build assets, maintain the same for a certain period, and – at the end of the period – relinquish all rights to the public utility. The private operator would get the price calculated over the life of the contract to cover its construction and operating costs along with a reasonable RoR (rate of return). This is a long-term contract.

A related concept is ROM (rehabilitate-operate-maintain) where the private operator provides necessary investment for rehabilitating the water system, and sells its services to a public utility manager. This option allows the influx of management expertise to some extent. Commercial as well as investment risks remain the burden of the private operator.

Concession contract

A concession agreement or franchise is a means of awarding fixed-term, monopoly rights to provide a service to a private firm within a geographical area. Under this option, a private operator not only has the responsibility of O&M of the existing assets but is also accountable for new investments, even though their ownership lies with the government or the public utility. The contract usually lasts 25–30 years. The concession is governed by terms and conditions set through a contract, which outlines main performance targets (such as quality or coverage or both), arrangements for capital investments, performance standards, mechanisms for tariff adjustments, and arrangements for dispute resolution. This option could bring in technical and managerial expertise, operating efficiency, and additional investment. The investment and commercial risks lie with the private operator.

Such contracts provide a means to institute regulation gradually alongside incremental PSP. This framework is also flexible and can be adapted to suit most conditions. It is also effective in situations of functional unbundling of the sector.

Before the introduction of PSP in the water and sanitation sectors, the Argentine government adopted market-oriented reform programmes and privatized the ownership of many government enterprises in sectors such as electricity, telecommunications, and gas. Therefore, the government's efforts in introducing reforms in the sector came as a natural corollary to its commitment to the privatization process. As in other sectors, the rationale for reforms in the water and sanitation sectors came from their poor performance due to management by public enterprises. A need for the reduction of the fiscal burden, and improvement of efficiency and quality in the provision of water and sewerage services, was recognized. The government resorted to PSP through the concession option, rather than through a management contract or lease, as it wanted to attract additional resources in the sector through private operators. It did not opt for the divestiture mode, as that would have meant a delay in collecting requisite information on valuation of water resources (Alcazar, Abdala, and Shirley 2000).

In the case of Bolivia, the government was firm on universalizing access to water services and sewerage systems in the country, and it introduced national regulations to achieve this goal. Its public utilities in water and sanitation services were not in a position to implement the above regulations, and were unable to expand and ensure water supply and sewerage connections effectively to many parts of the urban areas. As a part of the government's initiatives for PSP, a concession contract was awarded to Aguas del Illimani in 1997 under which the latter accepted the responsibility of providing water and sanitation services in the La Paz-El Alto metropolitan area. SAMAPA (Servicio Autonomous Municipal de Agua Potable y Alcantarillado), being the erstwhile public service provider in the city, continues to exist as a legal entity whose activity is limited to administering the company's assets. The concession contract was subject to strict performance standards such as output standards (service type, service quality, source reliability, customer service) and input standards (materials, design) that are subject to approval by the regulator, and mandates for expansion of services. Further, while designing the national regulations for PSP, the government took into account – through a well-designed subsidy programme – the needs of the low-income user groups.

In the case of Chile, there was a felt need for additional resources for undertaking expansion and maintenance of various services. In the early 1990s, the government set up 13 state-owned corporations responsible for asset management, operation of water and sanitation services, and investments. Subsequently, these corporations had to execute concession contracts and were brought under a new regulatory framework. The new regulation reduced information asymmetries, increased managerial incentives, and brought efficiency gains to public corporations in the water sector. Privatization through concession ultimately occurred in the late 1990s (Mary, Shirley, Colin, *et al.* 2000).

Divestiture

This option, through the sale of assets or shares or through management buyout, can be partial or complete. It gives the private operator full responsibility for operation, management, and investment. Unlike concession, it transfers ownership of assets to the private sector. The benefits of complete divestiture are limited in the absence of appropriate regulation for the sector, as the water and sanitation sectors are characterized by large monopoly networks.

Before 1989, water and sanitation services in England and Wales used to be the responsibility of regional water authorities. As a public sector activity, the government realized the shortage of funds for maintenance and improvement of the infrastructure required for water services. Along with these financial constraints, there was increasing pressure for higher standards for drinking water and waste water treatment, arising from the European Union regulations.[1]

In England and Wales, privatization was seen as the only strategy for achieving the government's aims of increased efficiency and access to private funds for investment. Therefore, in 1989, the water industry in England and Wales was privatized. The operational and regulatory functions of the water authorities were separated. Companies were created and charged with the responsibility for the authorities' operations; the authorities' assets were transferred to them. These companies were then sold to the public. Initially, the government kept a golden share in each company to retain some measure of control over their ownership, but these too were soon sold, and the government now owns no share in any of the water companies. The companies operate under licences, granted initially for 25 years. The licences can be terminated after that period, although a notice of 10 years has to be given. If that should happen, the assets would be transferred to another company on appropriate terms. The old private water companies that had continued to exist were brought into the same licensing and regulatory system as the newly privatized companies. Under their licences, the privatized companies are required to provide waste water services to all the customers in their areas, and to provide water even to customers not served by the old companies.

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[1] About 50 billion British pounds sterling were estimated to be required between 1989 and 2005 to meet the standards required by the European Commission.

Policies for private sector participation in the water sector

There have been several policy interventions by the Union government in the areas of water supply and sanitation, highlighting the need to improve the delivery of these basic services and acknowledge the possibility of private investment in improving them. The Union government initiatives that explicitly acknowledge the need for PSP in the delivery of water supply and sanitation services include the NWP of 2002.

There are some initiatives in the states as well. Most states in India, however, do not have a state-wide water policy with explicit guidelines for PSP in the water sector. Nevertheless, some inference can be drawn on the perceived incentive structure in a state, based on projects that have been considered for PSP (Box 1).

Lessons from private sector participation in India

There have been limited PSP initiatives in the water sector in India, with those initiatives being confined to discrete functions and to forms such as management and service contracts. However, a water supply and sanitation project covering the Tiruppur municipality in Tamil Nadu is being

Box 1 Private sector participation policy in the water sector in Gujarat

Gujarat's Water Policy (2000) explicitly recognizes the need for PSP (private sector participation) and commercial orientation in urban water supply projects. It states that 'private participation and commercialization would be adopted'. Even in the case of rural water supply projects, PSP is to be 'promoted and facilitated'. The Policy also recognizes the need for various 'forms' of PSP, not just privatization of complete services. The rationale for PSP emerges from the need to finance development of the sector and to promote efficiency.

While there are no guidelines or incentives for PSP specifically in the water and sanitation sectors, a detailed review of the legislative framework for Gujarat reveals that provisions in the existing legislations allow sufficient flexibility to existing service providers to initiate PSP. In addition, the Gujarat Infrastructure Act (1999) provides a framework for participation by persons other than the state government and government agencies in financing, construction, maintenance, and operation of infrastructure projects in Gujarat, including water supply and sanitation. Section 4(1) says that a person may enter into a concession agreement with the state government, government agencies, etc., with respect to projects relating to water storage, water supply, and sewerage systems.

The nature of the concession agreement has been identified in Schedule II under the Act. The Act further lays down the procedure for drafting the concession agreement, and the selection of a private partner through competitive public bidding or through selection by direct negotiations. It also lays down the procedure to charge for the goods or services provided, so long as the project continues to vest in him. Financial securities for maintenance of project, transfer of certain rights, termination of concession agreement, etc., have been laid down in the Act itself. Thus, a general framework has been provided for facilitating PSP in water supply in Gujarat.

developed on a BOOT model. In Karnataka also, the BOOT option is being explored for various activities in the water sector. Maharashtra has also experimented with a large number of PSP-based projects.

Small-scale versus large privatization

Like in most other states in India, attempts at large-scale privatization in Maharashtra have not been successful

(Table 3). PSP has largely been limited to service and management contracts. There have been very few instances of private investment. While this has limited the interaction between private operators and final consumers, it has also meant that PSP in the sector has developed without strong political or popular opposition. Thus, it provides a foundation for larger PSP in this sector.

Phased approach

An ambitious PSP plan was designed for augmenting the water supply and sewerage network in Pune, but did not materialize despite active technical and financial support from multilateral agencies. The project eventually fell through due to lack of political support. Learning from these experiences, a management contract is being suggested in the Sangli and Mumbai privatization projects as a first step towards larger PSP in the form of concession agreements, etc. (Box 2). The idea is that the success of these contracts would be able to generate support from consumer groups, employee unions, and other stakeholders, while demonstrating the financial viability of this sector to private operators. This is similar to the privatization strategy adopted in Trinidad and Tobago, and which is currently being considered in Bangalore.

Need for appropriate regulation

The experience in Ajmer, Rajasthan, has revealed that in the absence of an independent regulator, current regulatory supervision lacks the credibility to administer even primitive forms of PSP such as service and management contracts. Labour unrest and lack of transparency have been identified as the major shortcomings of the process in Ajmer (Box 3). While it may be possible to overcome some of these concerns in the short run – through well-designed contracts – more sophisticated regulatory arrangements would be necessary over an extended time frame.

Table 3 Chronology of events for the Pune Water Supply and Sanitation Project, Maharashtra

Date	*Event*
April 1996	The PMC's (Pune Municipal Corporation's) internal feasibility report is prepared. The Standing Committee gives permission to proceed for private sector bids, to solicit domestic and international financing, and to go to the High-Powered Committee on Privatization of Infrastructure, Government of Maharashtra.
April 1996–March 1997	Plans presented to three or four informal meetings of the elected councillors of Pune.
July 1996–January 1997	The Indo-US FIRE (Financial Institutions Reform and Expansion) collaborates with the PMC in preliminary project preparation.
January–February 1997	Kirloskar appointed to prepare a detailed feasibility report.
March 1997	The High-Powered Committee approves the project and authorizes competitive proposals from the private sector. The PMC invites expressions of interest from private sector: 30 companies respond; 14 are short-listed.
April 1997	Project documents are issued to short-listed companies. Meetings and site visits are arranged.
May 1997	Pre-qualification documents are submitted.
June 1997	Six consortia pre-qualify.
July 1997–February 1998	Technical reports are prepared, discussions are held with all interested parties, and the project structure is defined. Note on the financial implications of the project are submitted as part of the 1998/99 budget. Meetings are held at the state level.
October 1997	Local elections in Pune change the composition of the General Body of elected councils.
February 1998	The High-Powered Committee requests approval of the state cabinet.
9 March 1998	Cabinet approval is grated. Grant aid comes from the Government of Maharashtra. Tax exemptions result in savings of 700 million rupees. Approval of the issue of the RFP (request for proposal) comes through.

Continued...

Table 3 Chronology of events (*contd*)

Date	*Event*
31 March 1998	700 million rupees are set aside to meet contract payments approved by the Standing Committee.
March–April 1998	National elections result in change of political alliance at local and state levels.
April 1998	Pune's Municipal Commissioner is transferred on 24 April. Six companies submit applications.
28 April 1998	The RFP is issued.
30 May 1998	The pre-bid conference is held.
June 1998	The deadline for technical and financial submissions is extended to 22 October; three to four bids are expected.
7 October 1998	The project is cancelled.

Source WSP (2000a)

Box 2 Phased privatization in Mumbai

It has been recognized that private sector participation in the water sector can be adopted as a strategy to meet the objectives of providing potable water at lower costs, raising living standards through better access to clean drinking water, improving water supply to slums and the tail-end and elevations at convenient hours, reducing unaccounted-for water, and moving towards a 24-hour supply. However, in the absence of any previous experience in a similar setting of large-scale privatization in the sector, the BMC (Brihan Mumbai Corporation) has chosen a more modest form of private participation—the management contract. The idea is that a successful management contract (on a pilot scale) would lead to greater political acceptance and consumer support, apart from addressing labour issues. The project would be tried out on a pilot scale for one ward only, given the problems of providing 24-hour supplies over larger areas, and the difficulty of regulating more than one pilot areas.

The contract is being designed for a period of five years, extendable by another five. The design seeks to achieve maximum efficiency at appropriate costs. The procurement and management responsibilities will remain with the contractor. The contractor will be free to engage its staff; penalties and rewards will be devised on the basis of predefined benchmarks for evaluating performance. The regulatory functions will be discharged by the BMC.

Box 3 Privatization woes in Ajmer

PSP (private sector participation) in operation and maintenance of Ajmer's urban water supply system is the only notable example of PSP in Rajasthan, though this too has not been without problems, some of them with serious implications for the sustainability of the new institutional arrangement. The Labour Union has opposed contracting out the management of the water supply scheme to private operators. The Union's concerns are the possible loss of jobs for existing employees as well as future loss of employment for their descendants. The workers have protested by holding sit-down strikes outside the office of the Chief Engineer of the PHED (Public Health Engineering Department), and have also periodically disrupted the functioning of the city distribution network, which is the direct responsibility of the PHED.

In addition, there is risk of collusion among firms since PSP in water supply is limited in India. Most private firms bidding for these contracts are large construction firms willing to diversify. The number of such firms that possess relevant experience, infrastructure, manpower, and access to credit is small.

Such collusion actually took place in the last round of bidding, when all firms quoted identically high rates. The bidding was cancelled and the existing contracts were extended, while the PHED started working on revising its contracting procedures. Finally, there are also risks arising from private monopolies.

Source WSP (2000b)

Scope for private sector participation

As described above, there are a number of models for PSP in this sector. There can be no single 'correct' model. The extent of variation of such benefits has been summarized in Table 4. Each country has to adopt its procedure and choose options depending on varied circumstances. In addition, the extent of stakeholders' support and necessary political commitment would determine the best possible option. These models are not mutually exclusive and can be simultaneously adopted for restructuring the sector.

Table 4 Characteristics of various private sector participation options

Option	*Level of stakeholder support and political commitment*	*Technical expertise*	*Management expertise*	*Operating efficiency*	*Investment*
Service contract	Low	Yes	No	No	No
Management contract	Low to medium	Yes	Yes	Some	No
Build-Operate-Transfer	Moderate to high	Yes	Some	Yes	Yes
Concession	High	Yes	Yes	Yes	Yes
Divestiture	High	Yes	Yes	Yes	Yes

Making a choice from among these approaches will depend on the commercial and social orientation of the service provider. Service providers in India are governments or statutory public agencies, which, given the monopolist nature of the sector, lack such incentives. There is no competitive pressure to enhance efficiency.

Finally, the choice of the appropriate form of PSP would depend on the potential for the introduction of competition in the sector. As can be seen from Table 5, it is not possible to introduce competition in the market in all segments of the sector. As the USO (universal service obligation) in this sector is much stronger that in other sectors such as telecom, the potential for competition is an important criterion in selecting the optimal form of PSP. However, it may still be possible to achieve an efficient outcome by introducing competition for the market with appropriate regulation even where competition in the market is not possible. Additionally, options to introduce surrogate

Table 5 Potential for competition in the environment infrastructure sectors

Activity	*Degree of competition*
Water sector	
Capacity augmentation	Competitive
Treatment	Competition possible
Distribution	Local monopoly
Retailing	Possibility of introducing competition
Sanitation	
Capacity augmentation	Competitive
Collection	Local monopoly
Treatment	Competition possible

competition could also be explored, such as comparative competition between service providers in separate geographical locations.

Hence, it might be practicable to consider a gradual approach in initiating PSP in the water and sanitation sectors. As pointed out earlier, a greater degree of PSP would require a higher degree of regulation. A phased approach may also allow regulatory capacity to be built over time.

Phased approach for private sector participation

Phase I

A first step may be restructuring the water and sanitation departments as profit centres, followed by the corporatization of the utility or the formation of separate joint venture companies to manage the systems. This will help bring in necessary commercial orientation. These water supply companies could then operate with assistance from a strategic partner.

Phase II

For the existing distribution network present in large ULBs, the ROT (rehabilitate-operate-transfer) mode of privatization could be explored. Here, the existing distribution system would need to be repaired and restored to its desired condition by the private operator. This could be considered for some of the smaller municipal corporations and larger municipalities. Wherever the distribution network has not been laid, as in the urban areas adjoining the municipal corporations, PSP could assume the BOT form, wherein the private operator would also lay down the distribution network.

The informational constraints on PSP would not be as strong here, meaning that complete information on the layout of the network and its existing condition could be collected during the process of building or rehabilitating. Such a process would nevertheless require substantial social acceptance and political commitment, which would need to be developed over a period. Again, the consumer base would have to be adequately large. Finally, a commercial RoR and a stable regulatory framework would have to be ensured to attract private capital.

For local bodies that are not very large, it is still possible to sustain commercial operations through the use of private entities if management and service contracts are given to the private sector for discrete activities such as operation of pumping stations and water treatment plants, billing, etc. This option should be considered by all local bodies where the water supply situation is critical and where it is difficult to build support for PSP.

Phase III

A complete divestiture of the entire distribution network can be explored as an option for those sections of the distribution network that can be isolated from the rest of the network. Over time, the local body could divest its stake in the company, thus completely privatizing the sector. However, this would require acceptance of the privatization process and thus little social resistance to liberalization. In addition, the consumer base would have to be sufficiently large to make commercial operations viable. This would also require the existence of a substantial information base on the physical characteristics of the distribution network, alongside strong regulatory supervision of the sector.

Requisites for private sector participation

Private capital and initiative can help accomplish operational efficiency and investment objectives (outlined in the beginning of this chapter) if projects generate revenues that cover operating costs and debt-service payments, and earn a competitive RoR on equity. A fair RoR would require a well-specified contract, the existence of the WTP, and the ability to enforce payment. Uncovered political and regulatory risks require government attention in creating and maintaining a stable and predictable contractual environment if projects are to attract private capital. In addition, options that yield higher benefits also demand a higher level of government commitment (Figure 1).

Like other infrastructure sectors, the water and sanitation sectors are characterized by large, sunk investments with long payback periods. In contrast to sectors like power or telecom, there is limited potential for introducing direct competition in any of the main operational segments in these sectors. Sunken investments and natural monopoly characteristics make the sectors vulnerable to political expropriation and contracting problems. Water sector assets have the following additional institutional and economic features that differentiate them from assets in other infrastructure sectors, and raise issues of regulation in the sector.

- Increasing demand for public health services and a cleaner environment imply the need for establishing new regulatory structures, increasing investments, and raising prices.
- The value of existing underground assets is often uncertain; consequently, workable and credible

Option	Political commitment	Cost recovery	Regulatory framework	Information base
Service contract	☐	☐	☐	☐
Management contract	▨	▨	▨	☐
Lease	▨	■	■	■
Build-own-transfer	▨	■	■	■
Concession	■	■	■	■

High ■ Moderate ▨ Low ☐

Figure 1 Requirements for private sector participation
Source Brook (2000)

renegotiation procedures for investment plans and tariffs are critically important.

- Since government instrumentalities continue to deliver services in the sector, the current regulatory framework is not credible.

Finally, an appropriate regulatory framework is also required given the monopoly and merit good nature[3] of this sector. This is essential to ensure service quality, fair prices (to balance consumer and concessionaire needs), and meeting of USOs. The basic objective of such institutional reform is to move from publicly provided, free services as a right to a consumer orientation with access to services, with related standards being decided through broad political mandates. Under such commercially oriented entities, however, a major issue of concern will be to ensure access of the poor and low-income groups to the water and sanitation services. This means that regulators will have to ensure service coverage for these groups.

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[3] Merit goods are those that society thinks everyone ought to have – such as education and health – regardless of whether they are wanted by each individual.

4

Directions and strategies for regulatory reforms

There is a move to consider water supply and sanitation as economic assets as opposed to social infrastructure. For instance, reform strategies in Maharashtra have attempted to introduce principles of economic regulation in managing such infrastructure, while simultaneously ensuring that social concerns in terms of USOs and service quality are addressed. Here, the market restructuring of the water and sanitation sectors would help improve their financial performance. It would also help in conserving public funds for those activities that cannot be competitively rendered by the private sector. The induction of the private sector would enable improved performance and make available additional capacities.

However, to bring about the required improvements and attract private investments, restructuring of regulatory supervision in the sector would also be necessary. The basic principle for suggesting institutional reforms is that the role of the government (both at the state and local levels) should only be that of a facilitator, not a provider, of services. The experience of Maharashtra in separating regulatory and operational activities reveals that such separation would have to be accompanied by a strengthening of the regulatory agencies. This chapter outlines the proposed regulatory supervision for the sector in light of the recommended restructuring.

Need for independent regulation

Increased PSP is being sought in water and sanitation. A fallout of the privatization process is the likely increase in transaction costs, which have to be mitigated. The activities of monopoly service providers would also have to be regulated to protect the interests of consumers. The need for independent regulation arising from these issues is discussed in this section.

Regulating monopolies

Fixed costs in water and sanitation are very high when compared with variable costs. Some components in the system show economies of scale, and tend to create natural monopolies. For instance, water capture from a particular source is likely to have natural monopoly characteristics. So is the water transmission and distribution system, which exhibits the engineering scale of economies. Pumping from underground aquifers may not have natural monopoly properties; pumping from many wells can be organized into multiple and independent sources. However, pumping from one well can cause a drop in water levels so that pumping from the other wells becomes more expensive. Thus, efficient exploitation of a single aquifer from many wells may require some form of centralized regulation of pumping. While water treatment plants in themselves may not have scale economies, treating water that is delivered from a single transportation system is likely to be most efficiently undertaken at a single site or near the end of the transportation pipe. Thus, it is evident that capture, transmission, and treatment from each water source have monopoly characteristics. Further, distribution is also a monopoly, as is the sewerage collection network.

It is the activities of these monopoly service providers that must be regulated in order to protect consumer interests. A strong regulatory framework is called for, which not only protects the interests of the investors, but also balances them with public interest. Such a regulatory framework has to be outside the existing government set-up, and should have an arm's-length relationship with the government as well as with local bodies. Else, the requisite enabling environment, which could ensure protection of consumer interests, generate consumer trust, guarantee fair returns to the utility, attract private investment in the sector, and ensure transparency in governance could not be created.

Reducing transaction costs

Competition is possible among selection service providers for the right to supply such services whereby many players can participate in the bidding process. This would result in competition for the market instead of competition in the market. The terms and conditions of such services are generally outlined through detailed contracts. If the contract period is short, it is possible to specify every aspect of the contractual details. If it spans a long period, it is difficult to write time-consistent enforceable contracts that cover all contingencies that may arise during the concession period. Where tariffs and relevant factors cannot be unambiguously set out, there would be a need for mid-term reviews. This strengthens the case for an effective regulatory framework.

Insulating the sector from political risks

Consumers of environmental services constitute a large proportion of voters, and these services are perceived as essential functions of the government. Hence, it is often argued that these services should be subsidized. These considerations often compel many public authorities to advance short-term political objectives rather than long-term consumer interests. Investors are also aware of such pressures as well as the consequent vulnerability of their long-term investment. If there is weakness in the credibility of the commitment to the regulatory contract, the private entrepreneur deflects such risk by either increasing the cost of capital (leading to higher tariffs) or by compromising on the quality of service provided. Therefore, the need for credible commitment to the contractual obligations over the

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entire contract period is paramount when introducing PSP. An independent watchdog can ensure such commitments to regulatory contracts.

In addition, it has been observed that political interference in pricing results in low-level equilibrium (IADB 1999) of low coverage, limited investment, and poor quality service. Low-level equilibrium is often associated with high social costs that include a negative impact on public health. It also causes consumers to invest in the generation of private supplies at high costs, which results in environmental damage. Again, independent regulation can correct such a situation by insulating the sector against political risks.

Facilitating independence

As governments or their instrumentalities continue to be major stakeholders in the sector, the authority that aims to balance the interests of various stakeholders, including the government or local bodies, has to be independent of the latter. Independence, in the context of regulation, means that the authority with the 'expertise' should have all the attributes of autonomy so that it can apply its skill in accordance with the mandate, subject only to its charter as laid out in the instrument through which it was set up and the laws of the land.

International experience in regulatory reforms

Countries such as Argentina, Bolivia, Chile, Trinidad and Tobago, and the UK have created enabling frameworks in the context of PSP. The extent of regulatory supervision has been summarized in Table 1. It clearly shows that such supervision has to increase as one adopts a higher degree of PSP. For instance, regulatory supervision should be greater in the use of the divestiture option as in the UK, where the water regulator has the authority to modify licences, regulate water tariffs, promote competition, ensure quality of service,

Table 1 Private sector participation and extent of regulatory supervision: international experiences

Participation mode	*Country*	*Regulatory agency*	*Regulatory functions*
Management contract	Trinidad and Tobago	PUC[a] (government)	▪ Tariff setting
Concession	Argentina	ETOSS[b] (independent)	▪ Determining tariffs ▪ Approving and monitoring investment plans ▪ Disposing of complaints
Concession	Chile	SSS[c] (independent)	▪ Setting tariffs ▪ Setting and enforcing technical standards ▪ Granting concessions
Concession	Bolivia	SDA[d] (independent)	▪ Granting concessions and licenses ▪ Monitoring terms and conditions for concessions and their revocation ▪ Approving investment plans ▪ Setting tariffs for water in concession areas ▪ Recommending water rates in areas run by the municipality, excluding the concession areas ▪ Revoking concessions
Build-own-operate-transfer	Australia	OWR[e] (independent)	▪ Advising and developing policy ▪ Licensing ▪ Ensuring quality of service ▪ Responding to consumer complaints
Divestiture	England and Wales	OFWAT[f] (independent)	▪ Modifying licenses ▪ Regulating tariffs ▪ Ensuring quality of service

Continued...

Table 1 Private sector participation (*contd*)

Participation mode	*Country*	*Regulatory agency*	*Regulatory functions*
			▪ Responding to consumer complaints ▪ Monitoring and enforcing terms and conditions of license ▪ Reviewing investment plans ▪ Promoting competition and efficiency

[a] – Public Utilities Commission; [b] – Ente Tripartite de Obras de Servicios de Saneamiento; [c] – Superintendent of Water and Sewerage Services; [d] – Superintendencia de Aguas; [e] – Office of the Water Regulator; [f] – Office of Water Services

Source IADB (1999)

review investment plans, etc. On the other hand, in the case of the management contract operational in Trinidad and Tobago, the regulator has only a tariff-setting function. In the use of the concession mode such as that existing in Argentina, the regulator determines water tariffs, approves and monitors investment plans, and redresses complaints.

Further, most of these countries have positioned their regulators at arm's length from the government or concerned local bodies. Hence, in most cases, these bodies enjoy a certain degree of independence.

Strategies for regulatory reforms

Given the need for independent regulation and the reform experiences of other countries, regulatory reforms for the water and sanitation sectors in India are suggested in this section. The guiding principles of the proposed reforms are the following.[1]

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[1] Adapted from Shukhtankar (2001)

- Universal access to water and sanitation services
- Improvement in the quality of service delivered
- Improvement in quality of water supplied and of sewage disposal
- Increased financial viability of the sector.

In India, there are at least two reasons why the regulator should be in place even before PSP is initiated in a substantial way in the sector. First, there is a need to improve the operational efficiency of the service providers by aligning the cost of supply with the tariff. This would make the operation of these services more sustainable, and eventually more attractive to the private sector. Second, there is a need to set standards of service, and enforce the same. The regulator should be able to take an independent view of this. Given the above experiences, it is desirable to position the regulatory authority in India before the sector is opened to private operators.

Activities to be regulated

There are six components in the water and sanitation delivery system.

1. Capturing water at its sources
2. Transmitting (or conveying) water to a place
3. Treating water
4. Delivering water to the users
5. Collecting waste water from users
6. Treating the waste water.

Unlike other sectors, fixed costs in all these segments are very high compared to variable costs.

The above monopoly service providers are spread over entire states. It is, therefore, logical that the jurisdiction of the regulatory authority should extend over entire states. In addition, the segments of the water supply system (such as capturing services, conveyance of water, and distribution of water) that have monopoly characteristics should be subject to regulatory jurisdiction.

However, it must be noted that with the 73rd and 74th Constitutional Amendments, these functions vest with the local bodies. Thus, any changes that are proposed should not violate the spirit of the 73rd and 74th Constitutional Amendments. To ensure this, it is recommended that the regulatory reform process be consultative, and that state governments establish a consensus with the local bodies that would fall under the purview of the independent regulator. This would be imperative in light of the fact that this sector is socially and politically sensitive.

Tariff regulation

Monopoly service providers in each state have been listed here.

1. Capture of sources
2. Transmission (or conveyance) of water to a place
3. Treatment of water
4. Delivery of water to users
5. Collection of waste water from users
6. Treatment of waste water

As applicable to these monopoly service providers, regulation of water tariff (or charges) should be one of the primary functions of the regulatory authority. In effect, the regulatory authority would need to regulate tariff – bulk as well as retail – for water and waste water. While it would be desirable for the regulatory authority to regulate the retail charges, it may not be feasible or practicable considering the large number of local bodies. In these cases, it is possible for the regulatory authority to suggest principles for determination of water tariff. Such principles should be taken into consideration by these local bodies at the time of fixation of charges in their areas.

Regulation of private sector participation

Under the existing legislative framework in the states, various bodies such as corporations, municipalities, and panchayats are authorized to contract (if required) the delivery of environmental services to any person, including private operators. The regulatory authority, being an expert body, should be in a position to develop generic terms and conditions of various concession agreements, keeping in mind the interests of the consumers as well as those of the private operators.

Since the regulatory authority would recommend the terms and conditions of the concession agreement, it is desirable that the regulatory authority monitors such terms and conditions over the duration of the agreement. Through the contract period, the regulatory authority would act as an independent watchdog, scrutinizing the performance of the private concessionaire.

Facilitation of quality of service

The quality of service in these sectors in India is far from satisfactory. Service quality comprises technical quality as well as standards of service to customers. With respect to technical quality, SWSSBs and ULBs (in most states) follow water quality standards as laid down by the WHO and the BIS. There is no specific provision in the existing legislation that mandates service providers to lay down and enforce water quality standards. There is, thus, a need to ensure that minimum standards of water quality are statutorily established and adhered to, by different service providers. On the other hand, there are statutory standards for municipal effluents and municipal solid waste management under the Environment Protection Act (1986).

Since water is essential to life, it is imperative to ensure that the water provided to consumers is of the best quality possible. Many countries such as the UK have kept water quality under government control so as to set and ensure proper water quality standards. The Drinking Water Inspectorate under DEFRA (Department of Environment, Food, and Rural Affairs), through its audit role, carries out annual inspections of companies, checks the results of monitoring, and the reliability of data on tests carried out by companies. In India, state governments should continue to regulate water quality standards through the existing public health engineering departments. The latter need to be strengthened to be able to lay down and enforce minimum standards of water quality in the state. Else, state governments may assign this function to the regulatory authority, which can develop and lay down the water quality standards through a transparent regulatory process.

Promotion of economy and efficiency

Public service providers in India do not operate efficiently. They suffer from many weaknesses: inadequate planning, inability to become financially solvent through proper user charges, lack of management autonomy and accountability, lack of consumer orientation, lack of better accounting and financial management, etc. In Chile, the National Water Regulator takes steps for making public service providers efficient and viable through better accounting and management practices and other measures. In the UK, the regulator promotes economy and efficiency of the water companies. If the sector runs inefficiently, it would go against consumer interest. It is, therefore, necessary that measures be taken to improve the sector by focusing on its efficiency and operational economy.

Promotion of competition

In India, as in many other countries, it may take time to introduce genuine competition in the water and sanitation sectors. It is, however, possible to provide a framework for introducing 'comparative competition' among the various service providers in local bodies (Box 1). It could initially start with municipal corporations, and gradually expand to other local bodies. The regulatory authority can collect information on certain parameters, compare the same among various service providers, and set standards at a higher level, which could be comparable with the best performing utility at the national or international level. Such 'comparative competition' is being used in the UK by the Office of Water Services in bringing higher efficiency to the working of water companies, as well as introducing economy of operation.

Adjudication of disputes

As stated earlier, with the introduction of new private service providers, there will be many players in the sector. While individual concession contracts would invariably incorporate a provision for dispute settlement between a developer and an agency, a framework for adjudicating disputes among different service providers is essential. Further, such forums must also address consumer issues, especially those regarding quality of services.

Box 1 Report cards

A number of efforts using 'report cards' have been undertaken in India to establish and monitor public opinion with respect to the delivery of public services. Report cards are a method of measuring public opinion in a structured way by using household sample surveys, focus group discussions, case studies, and documentation of information from service providers as well as from interviews with a sample of lower-level staff of concerned agencies. The cards attempt to assess, rank, and benchmark the following parameters.

- Overall satisfaction with service delivery
- Extent and coverage of services
- Patterns of emerging problems
- Response of agencies to reported problems and grievances
- Effectiveness of bribes ('speed money') in rectifying reported problems

Source The World Bank (1998)

Table 2 Functions of the regulatory authority

Water supply	*Sanitation*
▪ Setting bulk and retail tariff	▪ Setting retail tariff
▪ Ensuring service quality	▪ Ensuring service quality
▪ Ensuring technical quality	▪ Resolving disputes
▪ Resolving disputes	▪ Recommending terms and conditions of contracts
▪ Recommending terms and conditions of contracts	▪ Promoting efficiency and economy
▪ Promoting efficiency and economy	

Summary of regulatory activities

The regulatory authority should undertake the functions listed in Table 2.

So far, state governments or local bodies exercise all the tabulated functions. As this arrangement has not yielded a satisfactory outcome, we have argued the case for independent regulation. This can be accomplished through enactment of a new legislation, which is called for due to the following reasons.

- A new legislation will demonstrate the commitment of state governments to the reforms and would thereby reduce the risk perceived by potential investors.
- Introduction of a new legislation will eliminate the possibility of conflicting provisions and interpretations under different legislations.

Further, independent regulation through a separate enactment will send a signal not only to potential investors but also to the public in general that state governments are committed to protecting public interest, even in cases of PSP. Therefore, regulatory functions, as stated above, should be given to regulatory authorities through independent legislation.

5

Democratic decentralization and community participation

Community participation in the management of natural resources is now considered an essential principle and a central component of the development and conservation of natural resources. It essentially means that the community (referring to the intended beneficiaries) accept the project as their own effort, and thus participate in it at various stages. The community participation approach is based on the premise that the community has a say in the project conception; it is demand-driven and need-based, and the community possesses substantial knowledge required for the design and operation of the project. This ensures a commitment from the community and helps to reduce monitoring, supervision, and maintenance costs. Thus, as opposed to supply-driven schemes, direct interest of the users is a major strength of any community-driven scheme. Self-regulation is the other essential element in such schemes. Consumer participation in local water supply and sanitation projects has also been seen to improve efficiency and increase ownership. User participation also makes services and service providers more responsive and accountable to beneficiaries, and aligns the provision of services with users' needs and ability to pay, thereby improving cost recovery and sustainability. Thus, a demand-driven approach provides users with the services they want and are willing to pay for.

Models of community participation

There are a number of models for community participation. There are informal community participation initiatives taken by individuals, as in Kolhapur and Naigaon in Maharashtra, and community initiatives facilitated and supported by the gram panchayat, as in Olavanna in Kerala. In some cases, the community is a registered cooperative society and actually owns the schemes initiated by it, while in others, it is only involved in O&M while scheme ownership rests with the government. In both cases, however, the community initiatives do not have legal recognition under the institutional and regulatory framework of the sector.

Self-initiated community participation schemes are need-based, usually entirely community-driven, sometimes entirely self-funded, and are not part of any existing institutional framework. Most water-supply-related initiatives taken up through community participation are limited to rural areas where single water schemes are possible. In this approach, the existing institutional structure (the gram panchayat) may play a supportive role from outside as is the case with the Olavanna community initiative (Box 1).

The second model of community participation is the government-steered, demand-responsive approach. In this approach, community participation is incorporated in the project plan of government schemes and managed within the existing institutional framework. Examples of this approach exist in the UP (Uttar Pradesh) Swajal project (Box 2). What varies in these examples is the degree of community participation.

There already exist a number of examples wherein community participation has been incorporated within existing institutional structures. Some of these are discussed here.

- In some states, VWSSCs (Village Water Supply and Sanitation Committees), comprising user groups, have been set up either as sub-committees under the gram panchayat or as self-standing independent organizations.

Box 1 Olavanna community initiative

In the 1980s, Kozhikode district in Kerala suffered acute water scarcity. The service of the Kerala Water Authority proved to be very unreliable. Small groups of villagers of the Olavanna village's gram panchayat organized themselves into groups for providing drinking water supplies since 1987.

Highlights of the model

- The villagers have formed a registered cooperative society, collected money, and set up small piped water supply schemes to meet their needs. Today, there are over 25 such private cooperative societies operating in the gram panchayats.
- Self-regulation is the essential issue in this scheme. Except during the summer months, water is available 24 hours a day. In the summer, water supply is reduced to 10 hours a day, by mutual agreement among the beneficiaries.
- The user community has met the full capital and operation and maintenance costs of their drinking water schemes. There is, thus, a user willingness to pay. Community groups have paid 100% capital costs involved as well as 100% operation and maintenance costs.
- Such private schemes are most cost-effective since in most government-run schemes, a large part of the cost is towards paying staff salaries.
- There is user satisfaction because of efficient user management.
- The villagers have done without external technical assistance, using local expertise quite efficiently.
- The schemes have been supported by the gram panchayat president, and the panchayat has played the role of a facilitator, not a provider.
- Water is now perceived as an economic good by the community.

Experiences on both counts have been mixed. Bodies like the VWSSCs and interest groups can strengthen the case of the community and help it deal effectively with PRIs (Panchayati Raj institutions) and state governments by creating linkages with the user. For example, in the Rural Water Supply and Sanitation project funded by the World Bank in Karnataka, VWSSCs have been constituted as elected bodies but are dominated by an elite few. Other community members, however, participate through smaller informal caste- and gender-based subgroups, and

Box 2 Swajal: decentralized decision-making and demand-responsive approach

The World-Bank-funded Swajal project in UP (Uttar Pradesh) is an alternative service delivery project steered by the UP government to improve the sector situation. Three organizations at different levels constitute the institutional framework for the project. A network partnership is provided by the village water and sanitation committee at the community level, a support organization (an NGO) at the district level, and a project management unit at the state level. This partnership is more than just a contractual arrangement. Through this set-up, the project aims to undertake the following.

- Adopt a demand-responsive approach for village selection
- Advocate the use of water as an economic good
- Provide a decision-making role for the community in identification, planning, design, construction, and operation and maintenance of the water supply and sanitation schemes
- Create institutional mechanisms to facilitate decentralized decision-making

their consensus on issues is a part of the conflict resolution.

- A PRI can play the role of a facilitator and the community group can act as the provider of services. The community initiative in Olavanna, Kerala, illustrates this model well.
- Through the VWSSC, community participation in government-steered projects has also been successful because of the decentralized decision-making and demand-responsive approach. The Swajal project in UP further illustrates this point.
- Kerala incorporated community participation in its piped water project plan and developed an institutional structure to attain and sustain it. In one of its piped water schemes, it created SEUs (socio-economic units) under the Kerala Water Authority. The SEUs facilitated the creation of WWCs (Ward Water Committees) in each village. The WWCs act as links between the villagers and

the SEUs, and participate in the decision-making process as well as all phases of the project.

Lessons from initiatives in the sector

There are several other instances of community participation in the water and sanitation sectors in India. Based on a detailed review of these, some lessons have been drawn for reforms in this area.

Rural and urban sector reforms

In Maharashtra, while the need for institutional reforms in the entire sector has been recognized, it was felt that the form of restructuring would depend on the context. In rural areas, where single water schemes are possible, the emphasis has been on community-driven approaches. In urban areas, which would require larger projects, commercial and economic considerations are primary.

Setting quality of service standards

Maharashtra has seen a transition from service standards being set by the state government to a scenario where each community decides the service standards that should be realized, based on an assessment of the costs involved and the benefits derived. This has resulted in a decrease in the investment requirements of the sector by 120 billion rupees (Shukhtankar 2001) and ensured that poor communities are not saddled with large, expensive projects that they are unable to fund and maintain. In addition, it allows communities to trade off the improvements in service quality (that would result from improvements in project design) with the incremental costs of such improvements, and thus make efficient investment decisions. Finally, this also ensures that communities own the projects once they are executed, as these would have been designed and at least partially funded by the communities themselves. A tempered version of the demand-responsive approach has been applied in urban areas in Maharashtra as well. Under the People's Contribution to Water Supply Schemes in the Municipal Corporations (2000) Government Order, financial contributions from urban communities are necessary.

The experience in Maharashtra clearly shows that service standards should necessarily be context-specific and, to the extent possible, devised by communities themselves. This is especially true in rural settings where the costs of water supply schemes could vary substantially across regions for the same set of service standards. A demand-driven approach – one that empowers local communities to set service standards based on the costs of alternative levels of service – would result in a more efficient solution.

Strategies for promoting community participation

In the absence of adequate service delivery mechanisms for drinking water supply and sanitation, a number of small-scale informal community initiatives have emerged to fill the gaps in the existing delivery system. As highlighted earlier, most instances of community participation in India are informal community initiatives; the community groups running these schemes have no statutory backing. A legal and institutional framework, which specifies ownership and responsibility for infrastructure investments in community-initiated projects and gives legal status to a community group operating a government-owned scheme, needs to be put in place to strengthen community participation. This is possible by providing statutory recognition to the user groups within the existing system.

However, this formalization or institutionalization of community would not mean setting up a parallel system of governance at the local level. It would be more appropriate to recognize legal community initiatives within the existing institutional framework of PRIs.

6

The reform agenda

The water and sanitation sector in India, especially in many urban areas, is characterized by a low-level equilibrium. There is a vicious cycle arising out of the interrelated factors such as poor finances, poor institutions, poor infrastructure, poor service, and consumer dissatisfaction. Since consumers are dissatisfied with the poor services, there is low WTP. As a result, revenue collections are poor, leading to inadequate generation of capital resources. This is also compounded by inadequate information. Inadequate resources also lead to ineffective management practices. In addition, as the focus in the sector is largely on the construction of new schemes, adequate management skills have not developed. This leads to inadequate provision of services, which again leads to consumer dissatisfaction. The resultant outcome is poor finances. As a result, most water service providers in the sector are not financially viable, and have to depend heavily on government subsidies.

In addition, the institutional and regulatory framework does not encourage efficient operation by service providers. This is compounded by the fact that there is no incentive among various players to bring about changes in the existing unsustainable water management system. There is thus a need to create an environment, which will emphasize performance improvement, rather than continue the current focus on physical expansion of water services. There is also a need for an appropriate policy for management and allocation of scarce resources.

Management of water resources should stress demand management rather than supply augmentation. An integrated approach to the development of the sector, which would call for conservation of surface water and groundwater, is needed. Existing institutions entrusted with allocation, planning, and management of water should be geared up to evolve such an approach.

In such a scenario, institutional and regulatory reforms would need to be brought about as part of a larger reform process. This would include developing a sector vision document, improving operational and maintenance practices, implementing innovative water conservation and recycling strategies, initiating institutional restructuring, and undertaking tariff reforms apart from regulatory reforms.

Policy reforms

The main guiding principles of policy reforms in water and sanitation, based on discussions in earlier chapters, are the following.

- Universal access to water and sanitation services
- Improvement in the quality of service delivered
- Improvement in quality of water supplied and sewerage disposed
- Ensuring financial viability of the sector.

Financial reforms

TERI (2001) outlines a gradual approach in tariff reforms. In the first phase, the emphasis is placed on laying down and enforcing the tariff principles. Later, an independent regulatory framework to regulate tariff is recommended. As there are usually no separate accounts for different municipal services including water and sanitation, it would be necessary to conduct cost-of-service studies to assess the extent of subsidy and cross-subsidy in the prevalent tariff structure, and formulate plans to optimize the subsidy requirement and the delivery mechanisms for operationalizing the reform process. As a first step, retail tariff should be rationalized to meet all justified expenditure on O&M, as has also been recommended by the NWP, 2002.

Participatory decision-making and management

The community participation approach is based on the premise that the community has a say in the project conception. This means that it is demand-driven and need-based, and the community possesses a substantial part of the knowledge required for the design and operation of the project. This ensures a commitment from the community and helps reduce monitoring, supervision, and maintenance costs. Most examples of community participation in the country are informal community initiatives, and community groups running these schemes have no statutory backing. To strengthen community participation, legal and institutional frameworks need to be put in place that specify ownership and responsibility for infrastructure investments in community-initiated projects, and give legal status to a community group operating a government-owned scheme.

Moreover, policies and strategies for efficient water management should be developed in participation with the local communities. Communities need to be organized around a common issue of concern – such as water scarcity – and their capabilities should be enhanced to design strategies, implement these, and monitor and evaluate their effectiveness. Such participation needs to be institutionalized by creating and strengthening community-based organizations. The strategies designed need to be particularly sensitive to the needs of specific groups, such as women and children, who are worst affected by situations of scarcity and contamination. While the Rajiv Gandhi Drinking Water Mission does incorporate several of the above characteristics, it is necessary to evaluate such programmes regarding their ability to ensure participation of communities in water management, and not just in terms of physical and financial targets. In addition, participatory management in urban areas has been explored in several sectors such as solid waste management (Box 1). In this regard, policies such as the Accelerated Urban Water Supply Programme should seek to include such strategies as key elements.

Information provision

To improve the coverage and quality of service, it is essential to improve the operational efficiency of service providers. Therefore, it is necessary to benchmark services so as to identify priority areas for improving efficiency and effectiveness of service provider. This needs to be complemented by a database for effectively managing the municipal information systems for monitoring the operational performance. Application of such a framework would help in identifying the lacunae in the existing system

Box 1 Community participation in urban areas

The BCC (Baroda Citizens Council) is a well-known community service organization engaged in development work for the urban poor in Baroda for the past 32 years. Registered as a society under the Societies Registration Act (1960), the BCC is also engaged in macro-level city and urban issues. It was started by the American Friends Service Committee (Quakers group from the US) in partnership with the Federation of Gujarat Industries, the Baroda Municipal Corporation, and Maharaja Sayajirao University of Baroda. It has very successfully demonstrated community-based partnership approaches towards various issues, including sanitation and waste management.

The objectives of the BCC include identifying socio-economic and civic problems and encouraging various groups, especially the urban poor, to solve them and to cooperate with local bodies and voluntary and government agencies in tackling city-level problems, especially of the economically and socially weaker sections of the society.

and devising appropriate policy instruments to improve the standards of service provided.

Resource conservation

Resource conservation should seek to enhance the efficiency of traditional water harvesting systems using existing knowledge bases of communities. At the same time, it should integrate modern technologies and necessary regulatory mechanisms for encouraging conservation through efficient water utilization practices. Resource conservation also calls for the development and strengthening of community-based water management systems that are sustainable in the long run. Sustainability is ensured in two ways. First, efforts should address a basic need and, second, projects and schemes need to be planned and implemented with local community-based organizations.

Institutional reforms

Currently, there is also no incentive among various players to initiate change in the existing water and sanitation management system. Since the accountability of service providers to its users is low, they have little incentive to provide cost-effective services, to become financially self-sufficient, to improve the quality of their services, and to consult various user organizations for better services. At the same time, the users have little incentive to pursue reforms since most of them are highly subsidized. Political groups are reluctant to antagonize these users due to obvious compulsions.

This requires substantial restructuring of the sector. The principle for institutional reforms is that the role of the government, at the state and local levels, should only be that of a facilitator and not of a provider of services. While there is a need for institutional reforms in the entire sector, the form of restructuring would depend on the context. In rural areas, where single water schemes are possible, the emphasis would be more on community-driven approaches. Urban areas, which would require larger projects, would require commercial and economic orientation.

The way forward

Water and sanitation in India are characterized by a 'low-level equilibrium'. The resultant outcome is poor financial health of the organizations providing these services. As a result, most service providers are not financially viable, and have to depend heavily on government subsidies. In addition, the institutional and regulatory framework does not encourage efficient operation by service providers. This is compounded by the fact that there is also no incentive among various players to bring about changes in the existing unsustainable water management system. There is also a need to create an environment that will place equal emphasis on performance improvement, rather than continue with the current focus, which is one of only physical expansion of water services.

Thus, there is an urgent need for an appropriate policy for management and allocation of scarce resources. Management of resources should place equal stress on demand management, rather than only on increasing the supply of existing resources. Existing institutions entrusted with allocation, planning, and management of the sector should be geared to evolve and implement such an approach. In such a scenario, it would require more than only regulatory reforms to bring about a marked improvement in water and sanitation services in India. It would be necessary to introduce wide-ranging reforms in the sector. This would include, besides the regulatory reform, improvements in managerial and operational practices, innovative water conservation, recycling strategies, institutional restructuring, and financial and tariff reforms.

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Index

[Page numbers in *italics* indicate tables, figures, or boxes]

73rd Constitution Amendment, 1992 14
74th Constitution Amendment, 1992 15

Accelerated Rural Water Supply Programme (*see* ARWSP)
Accelerated Rural Water Supply Scheme (*see* ARWSS)
Accelerated Urban Water Supply Programme (*see* AUWSP)
access to water services and sewerage systems, universalizing of 36
Ajmer, privatization in 43
Argentine government, adoption of market-oriented reform programmes by 35
ARWSP (Accelerated Rural Water Supply Programme) 7
ARWSS (Accelerated Rural Water Supply Scheme), measures taken under 18
AUWSP (Accelerated Urban Water Supply Programme) 16

bacteriological contamination
  of drinking water 25
  elimination of 28
BCC (Baroda Citizens Council) 70
Bolivia, initiatives for PSP (private sector participation) 36
BOT (build-operate-transfer) option 34

Central Public Health Engineering and Environmental Organization (*see* CPHEEO)
CGWA (Central Groundwater Authority), responsibilities of 9
channelizing resources, need to 21
Chile
  need for additional resources 36
  privatization through concession 36
community participation approach 69
community participation
  demand-responsive approach to 62
  examples for 62, 65
  in the management of natural resources 61
  in urban areas 70
  models of 61
  strategies for promotion of 66
  strengthening of 69
competition, promotion of 58

concession agreement, reasons for adoption of 32
concession contract 34
consumer dissatisfaction in poor services 67
CPHEEO (Central Public Health Engineering and Environmental Organization) 6

decentralization and local governance 14
democratic decentralization in Maharashtra 25
Department of Water Supply and Sanitation (*see* DoWSS)
  divestiture, option of 37
DoWSS (Department of Water Supply and Sanitation) 10
drinking water policy, formulation of 10
drinking water, bacteriological contamination of 25

economy and efficiency, promotion of 58
England and Wales, privatization of water industry in 37
environment infrastructure sectors vii
  competition in 45
environment infrastructure
  management of 22
  need for private participation in 27
environmental services, management of 19
EPA (Environment [Protection] Act), 1986 8

groundwater extraction, regulation of 9
groundwater regulation, enactment of legislation for 5
GSDA (Groundwater Survey and Development Agency), objectives of 11
Gujarat, PSP policy in water sector in 39

HUDCO (Housing and Urban Development Corporation) 6

incentives to state governments 13
incentives, lack of 71
independence
  definition of 52
  facilitation of 52
independent regulation
  case for 60
  need for 50
India
  water and sanitation in 72
  water quality trends in 3
India's cities, sewage from 2
information, lack of 22
institutional and economic features 47
institutional and regulatory framework 67
institutional complexities in water sector in Maharashtra 20
institutional reforms, principle of 71
international experience in
  private sector participation 33
  regulatory reforms 52

investment requirements for
  water supply 31

local governance, mode of 19

Maharashtra
  democratic decentralization in 25
  privatization in 39
management contract 32
  by Trinidad and Tobago 32
management policy for allocation of resources, need for 72
market-oriented reform programmes, adoption by Argentine government 35
Millennium development goals 4
Ministry of Environment and Forests (*see* MoEF)
Ministry of Health and Family Welfare (*see* MoHFW)
Ministry of Rural Development (*see* MoRD)
Ministry of Urban Development and Poverty Alleviation (*see* MoUDPA)
Ministry of Water Resources (*see* MoWR)
MoEF (Ministry of Environment and Forests) 8
MoHFW (Ministry of Health and Family Welfare) 7
monopoly service providers 56
MoRD (Ministry of Rural Development) 7
mortality rates, effect on 29
MoUDPA (Ministry of Urban Development and Poverty Alleviation) 6
MoWR (Ministry of Water Resources) 8
Mumbai, privatization in 42
municipal corporations, definition of 16
municipal councils, definition of 16
municipalities, responsibilities of 15

National Drinking Water Mission (*see* NDWM)
National Water Resources Council 8
natural resources, community participation in the management of 61
NDWM (National Drinking Water Mission) 7
new legislation, reasons for enactment of 60
NWP (National Water Policy) 8
  key features 12

Olavanna community initiative 63
operational efficiency of service providers, improvement in 70

Panchayat Raj institutions, involvement of 17
panchayats, three-tier system of 14
piped water, access to 29
policies for efficient water management, development of 69
policy interventions by Union government 11

policy reforms in water and sanitation, principles of 68
polluted water, results of exposure to 28
poor service quality, impact of 30
pricing, political interference in 52
private investment, requirement of 27
private sector participation
  international experience in 33
  options for 31
privatization in
  Ajmer 43
  Maharashtra 39
  Mumbai 42
problems associated with water supply 2
PSP (private sector participation) vii
PSP policy in water sector in Gujarat 39
PSP initiatives in Bolivia 36
PSP designing in Pune, objectives of 40
PSP in water sector 32
  lessons from 38
  policies for 38
PSP options, characteristics of 44
PSP
  choice of appropriate form of 44
  information constraints on 46
  international experiences of 53
  phases of approach for 45
  regulation of 57
  requirements for 48
  requisites for 47
  scope for 43
Pune Water Supply and Sanitation Project, chronology of events for 41

quality of service standards, setting of 65
quality of service, facilitation of 57

Rajiv Gandhi National Drinking Water Mission (*see* RGNDWM)
regulation
  of PSP 57
  of water tariff 56
  need for 40
regulator's appointment, requirements for 55
regulatory authority
  functions of 60
  primary functions of 56
regulatory framework, requirement of 48, 50
regulatory reforms
  directions and strategies for 49
  international experience in 52
  principles of 54
  strategies for 54
regulatory supervision
  international experiences of 53
  restructuring of 49
report cards 59
resource conservation 71
RGNDWM (Rajiv Gandhi National Drinking Water Mission) 7, 17
ROM (rehabilitate-operate-maintain) option 34
rural and urban sector reforms 65
RWSP (rural water supply programme) 7

Sanitation
  access to 3
  target for 3
Sector Reform Programme 17

selection service providers,
    competition among 51
self-initiated community
    participation schemes 62
self-regulation, requirement of 61
service contract, requirements of
    32
service providers, accountability
    of 71
SEUs (socio-economic units) 64
SSMNP (State Sector Minimum
    Needs Programme) 7
state water supply and sewerage
    board (*see* SWSSB)
Swajal, example of demand-
    responsive approach 64
SWSSB (state water supply and
    sewerage board) 10

TCPO (Town and Country
    Planning Organization) 6
TERI discussion paper on
    regulatory reforms viii
Town and Country Planning
    Organization (*see* TCPO)
Trinidad and Tobago,
    management contract by 32

UK, water quality monitoring in
    26
urban infrastructure management
    29
urban infrastructure, need to
    upgrade 21
Urban Reform Incentive Fund
    (*see* URIF)
urban service providers, need to
    equip 22
URIF (Urban Reform Incentive
    Fund), setting up of 13
user groups' participation 21

VWSCs (Village Water Supply
    and Sanitation Committees)
    62

*Water (Prevention and Control
    of Pollution) Act, 1974* 8
water and sanitation delivery
    system, components in 55
water and sanitation
  government's role in 6
  in India 72
  status of 1
water industry privatization in
    England and Wales 37
water planning and coordination,
    national perspective of 8
water quality monitoring in UK 26
water quality standards,
    enforcement of 7
water quality trends in India 3
water resources, management of
    68
water sector assets 47
water sector budget in the
    Ahmedabad Municipal
    Corporation 21
water sector
  in Maharashtra, institutional
    complexities in 20
  involvement of private sector in
    32
  lessons from initiatives in 65
  need for restructuring of 71
  political risks of 51
water supply and sanitation
    boards 10
water supply and sanitation,
    needs for 4
water supply, responsibility for
    provision of 1
water tariff, regulation of 56